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THE RADIOLOGICAL ASPECT OF CERTAIN FORMS OF OSTEOCHONDRITIS.[1]

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Introductory.

THE main causes of osteochondritis are tuberculosis and syphilis. During the past few years, however, chiefly as the result of radiographic investigation, a group of diseases of bone associated with cartilage has been recognized and to these the two pathological factors mentioned above appear to have little causal relationship. Trauma, infection of a non-specific nature, bone dystrophies, such as rickets and congenital abnormalities have all been advanced as their underlying cause without any general acceptance.

With the pathology in doubt it seems more strictly correct to term these conditions osteochondropathies, following the example of the Scandinavian radiologists who under the leadership of Professor Gösta Forsell, of Stockholm, have been active in recognizing the occurrence of these conditions in fresh situations. They are found in association with developing bone and therefore especially at the epiphyses. They are of interest to the clinician, particularly to the pædiatrist, because their signs and symptoms often strongly simulate tuberculosis, to the anatomist as they are found in association with abnormal ossifications, to the pathologist on account of their doubtful pathology and to the radiologist as it is on radiographic examination that their diagnosis is made.

As there is no original or research work in this contribution and as the conditions are not frequently met with in everyday practice, a word of apology for its appearance is necessary. I venture to believe that in the past some conditions of bone have been diagnosed as tuberculous which have not had this origin. This brief paper is amongst other things a plea for caution in the radiographic diagnosis of tuberculosis of developing bone and proposes to show that orthopædists and radiologists in England, in the United States and on the Continent are thinking along these lines.

I would also like to show by this paper that the types of non-specific osteochondritis with which we are most familiar, namely Perthes's, Köhler's and

[1] Read at a meeting of the Orthopædic Section of the Victorian Branch of the British Medical Association on September 5, 1925.

Schlatter's diseases, have their counterparts in other regions of the body and in so showing to raise the question for your subsequent discussion of their underlying pathology.

Osteochondritis Deformans Juvenilis Coxæ.

The synonyms of *osteochondritis deformans juvenilis coxæ* are numerous. Amongst them are quiet hip disease, pseudocoxalgia, Perthes's disease, Legg's disease, Calvé's disease and Waldenström's disease.

In a thesis describing some hundred radiograms of supposed tuberculous hip published in Paris in July, 1909, Sourdat described several cases showing features of special interest which had been indicated to him by Calvé, of Berck. The following year Calvé himself made a contribution to the literature on these cases. He designated them pseudocoxalgia and considered that they were atypical manifestations of rickets. In 1909 A. T. Legg, of Boston, read a paper before the American Orthopædic Association which was subsequently published in the *Boston Medical and Surgical Journal* of February 17, 1910. In this paper he discussed a number of cases of mild hip disease with distinctive radiographic appearances, namely flattening of the upper femoral epiphysis and broadening of the femoral neck. He considered that the condition was a distinct clinical entity of a non-tuberculous type and that the characteristic X ray picture resulted from vascular changes in the upper end of the femur secondary to trauma. In the same year of 1909 Waldenström, of Stockholm, had described a series with X ray appearances similar to Legg's cases, but he regarded the condition as a primary tuberculosis of the femoral neck without associated arthritis.

In 1910 Perthes, of Tübingen, published an account of a hip disease which he considered a type of *arthritis deformans juvenilis*. The radiographic appearances of the cases described by Legg, Calvé, Waldenström and Perthes proved to be identical. In a subsequent paper in 1913 Perthes removed the condition from the arthritides and termed it *osteochondritis deformans* as he now considered that there was an entire absence of arthritic changes. Mr. Harry Platt[1] in his excellent monograph on pseudocoxalgia considers that the distinction of first describing the condition as a separate clinical entity assuredly belongs to Legg. Because of the absence of known pathological changes and the disputed priority of description, pseudocoxalgia or osteochondropathy of the hip would appear to me to be the terminology of choice.

The X ray appearances of pseudocoxalgia may be divided into those of the initial stage, those of the stage when the condition is radiographically well developed, those of the stage of healing and those of subsequent appearances.

The Initial Stage.

Simple flattening of the femoral head is the earliest sign of the initial stage. The flattening when first seen may be only slightly vertical and without any lateral spread. Even at this early stage the epiphyseal nucleus may appear shrunken and a little denser than its fellow of the opposite side; there are at present no changes in the acetabulum or femoral neck. This stage which is said to last about six months, is not often seen, as the symptoms are slight and the patients are not brought for treatment during this phase. In the great majority of cases the process does not stop here, but proceeds to the second stage of fragmentation. It must be remembered that pseudocoxalgia is only one of the causes of *coxa plana* or flattening of the femoral head.

The Stage of Fragmentation.

In the stage of fragmentation the bony nucleus of the femoral epiphysis is seen to be broken up into a number of fragments with dense shadows indicating hypercalcification. When fragmentation is well marked, the head is seen to be more flattened and appears to be creeping out of the acetabulum towards the great trochanter; there is no one pattern in the fragmentation and the number and size of the fragments or islets vary considerably. The joint space appears wider than on the unaffected side. In many descriptions of the condition this point is not mentioned, but Fairbank with several of the later French contributors regards it as a valuable sign. Two factors probably enter into this widening, namely the ossific condensation of the epiphysis into the hypercalcified fragments and the fact that in this stage there is generally at one time or another a transient articular reaction with effusion into the joint.

The upper part of the femoral neck particularly near the epiphyseal line is broader than on the unaffected side; the length of the neck gradually shortens, but this is not conspicuous until late in the stage of healing. Calvé originally emphasized that a *coxa vara* was produced, but it is now generally accepted that there is no true *coxa vara,* though there is often an apparent lessening of the angle between the neck and the shaft. The structure of the femoral neck is altered. The common appearance is an ill-defined zone of altered calcification, producing a pumice stone like area in the upper part of the neck and less usually are seen more pattern like areas of condensation and rarefaction. Changes may be seen sometimes in the acetabular shadow and when present would appear to be due (i.) to a transformation similar to that in the femoral neck, namely, zones of condensation and rarefaction and (ii.) to an adaptation of the cavity to the altered lines of stress produced by the deformed head.

Some observers contend that the acetabular changes are inconspicuous and unimportant. Perthes states that the acetabulum manifests no deformation except in advanced cases, but Harry Platt insists that they can be seen at every stage. The acetabular modification to suit the altered head is generally shown by an increased obliquity of the roof. The epiphyseal line, as would be expected, shows variation in breadth and contour associated with changes in the head and neck.

The above changes describe the second or fragmentation stage. This generally lasts for one or two years and it is during this phase that treatment is usually sought.

The Stage of Healing.

The stage of healing is indicated by a coalescence of the bony fragments of the head and by the density of the epiphysis being diminished until the opacity is uniform and equal to that of the opposite side; the abnormal structure of the neck and acetabulum disappears, but the broadening of the neck persists and there is a gradual shortening of the neck as a whole. The head is creeping out of its socket. This stage lasts from two to five years.

Subsequent Appearances.

Even when the head is completely regenerated, a gradual moulding takes place until adult life. The head appears flattened against the great trochanter. Noble, of the Mayo Clinic, recognizes two resulting types of head, (i.) the ball shaped type in which the head is like half a sphere, and (ii.) the oval type in which it is like half an egg. In the former functional results are better than in the latter, where the limp, shortening and limitation of movement are prominent.

As would be expected, osteoarthritic changes following the deformed head are a sequel and generally commence at the age of about thirty years.

Reference should be made to Brandes's conclusions deduced from careful observation over a number of years of a series of cases. He recognizes two distinct groups of pseudocoxalgia: (i.) in which the head is flattened, but does not undergo fragmentation, and (ii.) in which the head is flattened, becomes fragmented, later fusing, but remaining flattened. In the former class he considers that a return to the normal may finally be seen.

The Differential Diagnosis.

Though the X ray appearance in a case of well marked pseudocoxalgia is sufficiently characteristic, very often other conditions enter into the differential diagnosis and amongst these the following are the most important.

Tuberculosis of the hip may produce an appearance that requires distinguishing from pseudocoxalgia. Primary osseous tuberculosis of the hip which is generally first evident on the diaphyseal side of the epiphyseal line, produces rarefied areas in the neck and may produce *coxa plana*; also the neck may become wider. When the joint cavity is infected, destructive changes usually occur in the epiphysis and acetabulum and these may in some degree simulate those of pseudocoxalgia. In tuberculosis narrowing of the joint space is produced as soon as the articular cartilages commence to be eroded and the typical blurring of outline and detail of the joint structures is present; the associated bones are atrophied with sketchy outlines. Though areas of rarefaction are evident, condensation is absent. If destruction of the femoral head is evident, the fragments do not present the dense shadows of hypercalcification. In pseudocoxalgia the radiographic evidence is well marked, but the clinical signs are not severe. Tuberculous arthritis usually begins before five years, whereas pseudocoxalgia generally produces symptoms after this age.

Infective arthritis in its acute stage would rarely enter into the diagnosis, but *coxa plana* may be a sequel to it and simulate healed Perthes's disease. Does the sequel to an acute arthritis ever proceed beyond a *coxa plana* and produce typical Perthes's changes of fragmentation *et cetera*? Mr. H. C. Colville has recently had in his clinic at the Alfred Hospital a case which raises this interesting question and perhaps he may speak on it later.

A chronic non-tuberculous arthritis should rarely simulate pseudocoxalgia. A chronic arthritis generally produces a narrowing of the joint space, whereas in pseudocoxalgia this is wider than normal. I think that it is important to remember that pseudocoxalgia is not an arthritis. It is an affection of the bone and cartilage outside and not involving the synovial membrane. The only time that the joint space is involved is during the second stage, when there is a transient effusion into the joint.

The question whether a hip is the site of healed Perthes's disease requires in my opinion a lot of consideration. Flattening of the head must be present, but this, as we have seen, can be the result of other conditions besides pseudocoxalgia. Another important point is that the picture must be taken without any rotation of the lower limb. If rotation is present, all sorts of abnormal appearances, including *coxa plana*, of the femoral head and neck can be simulated. Healed Perthes's disease in addition to the flattened head manifests a broadened neck, sometimes shortened without a *coxa vara*. Its bone structure, however, has returned to normal. The acetabulum, of course, is altered to suit the deformed head.

The underdevelopment of the femoral head seen in a recently reduced congenital dislocation, together with the flattening which may occur when development proceeds, requires the elimination by history of this condition. *Coxa plana* is a frequent sequel to reduction. Mr. H. A. T. Fairbank informs me that he has seen the typical sequence of changes peculiar to pseudocoxalgia supervene on reduction. Similar cases have been reported by Legg, who believes that pseudocoxalgia is more likely to ensue where there has been difficulty of effecting reduction and he claims this as evidence in favour of the traumatic origin of the disease. But the above sequelæ must be rare, though dislocated hip joints after reduction generally present appearances different from the normal. Many of them are indicative of an arthritis which Fairbank[2] has termed absorptive arthritis.

In the question of diagnosis it may be of interest to note that Dr. Murk Jansen, of Leiden, who is a strong advocate of the congenital theory of the causation of pseudocoxalgia, considers that alteration in the direction of the epiphyseal lines is one of the earliest radiographic changes seen in this disease. Other points he considers of value in the early diagnosis, are alteration in the depth of the

acetabulum and the appearance of *ischium varum*; the former is difficult to determine and *ischium varum* does not seem to have much diagnostic significance as it occurs often in tuberculous hip.

Osteochondritis of the Spine.

Scheuermann's Type.

The type of kyphosis known as juvenile dorsal kyphosis was first described as such by Schanz in 1911. It has been investigated radiographically by Scheuermann,[3] of Copenhagen, who has termed it *osteochondritis deformans juvenilis dorsi.* It is described by Trethowan in the orthopædic section of the latest edition of Choyce's "System of Surgery." This condition which is practically uncomplicated by lateral curvature, is distinct from the round back due to muscular relaxation. Unlike other forms of spinal deformity it occurs less frequently in girls than in boys in whom it appears at puberty. There is generally a history of heavy work with weight lifting, but this is not invariable. It has nothing in common with Kümmel's traumatic kyphosis, nor with the Bechterew or Marie-Strümpell spondylitic type. The fact that it was found in an overwhelming degree in youths of the apprentice class caused it to be described as the apprentices' kyphosis. From Scheuermann's writings one would understand that H. Virchow described this type of kyphosis (but not in a separate category) as occurring amongst the "Austral" aborigines. He is probably referring to the natives of New Guinea and Polynesia and he regarded it as a deformity due to the hunched position adopted when squatting. It would be interesting to learn if any such cases in the Australian aborigines have been noted by the Australian medical profession.

Normally epiphyses appear on the superior and inferior surfaces of each vertebra and are known as the superior and inferior epiphyseal plates. They do not stretch over the whole surface, but have the form of a ring which is broadest at the anterior edge and narrowest posteriorly. These plates are feebly developed in man compared with the lower animals, where a complete disc comparatively much thicker and more compact is formed. Virchow, however, states that the annular form is found also in apes and elephants. Not until the age of twenty-two to twenty-four years in man does fusion with the body occur. This process commences first in the cervical region.

In radiograms of the spine obtained from a patient in the lateral position these plates appear at the age of about fifteen years as small triangular shadows which lie near the anterior edge of the body in the outer vertebral space. As development proceeds the shadow extends backwards as a thin line. The posterior edge of the plate is not seen; the size of the shadow varies with development from that of a minute body to one centimetre long and two millimetres broad. It is unnecessary to mention that only in negatives of good quality can these shadows be discerned.

The radiographic picture in juvenile dorsal kyphosis when taken within the first six months of its appearance differs distinctly from the normal. In the lateral view those bodies which comprise the most prominent part of the kyphosis, are seen to be more wedge shaped than normal. At the anterior edges the epiphyseal disc is not seen as a small triangular shadow, but is broader and irregular. The contour of the associated vertebræ also appears irregular and indistinct. In the antero-posterior view, as one would expect, nothing abnormal is seen, because the shadows of the bodies are projected over one another. In Scheuermann's cases no more than three vertebræ were affected in any vertebral column. Radiograms taken at a later date no longer show the above changes. The epiphyseal ring is now seen as a distinct oblong shadow with definitely bordered edges and the vertebral contour has lost its irregular appearance.

Scheuermann cannot believe that the changes are due to increased pressure on the anterior edge of the bodies secondary to muscular weakness, as the dorsal muscles in these cases are generally well developed. He concludes that this disease is analogous to the common spinal deformity in horses and that the cause of the kyphosis lies in the epiphyseal rings. It bears many resemblances to other forms of osteochondritis and, therefore, is termed *osteochondritis deformans juvenilis dorsi.*

Calvé's Type.

Two cases have recently come under the notice of Calvé[4] which he describes as osteochondritis of the spine. Radiographically they bear a striking resemblance to Köhler's disease of the tarsal navicular. The patients were aged two and a half years and seven years respectively. Both presented signs of uncomplicated Pott's disease in the dorsal region with pain in the back, rigidity and the development of kyphosis. There was no abscess formation nor cord symptoms. Rest with plaster of Paris splinting resulted within three years in the vertebral columns appearing normal. But the radiograms were far from typical of Pott's disease. For example, only one vertebral body was abnormal, though a well marked kyphosis was present. The ossific centre was flat and lamellated, in one case regular, in the other irregular and slightly cuneiform. The bodies above and below were absolutely normal (see Figure I.). The translucent spaces between the affected and the adjacent bony shadows were much wider than normal. These spaces represent cartilage and such an increased width is not seen in tuberculosis in which infection, cartilaginous destruction with collapse and crowding together of the adjoining vertebræ are so frequent. The bony shadow cast by the affected body showed increased density. Radiograms taken at intervals while cure was progressing showed that the body was returning to normal. Calvé stresses the latter point as evidence against tuberculosis and refers to the work of his colleague Menard as having conclusively demonstrated that osseous tuberculosis does not regenerate. Those who have seen radiograms of osseous tuberculosis from patients treated at Rollier's clinic will not be prepared to accept this statement baldly. Not only at Leysin, but also in Vienna and London it is agreed

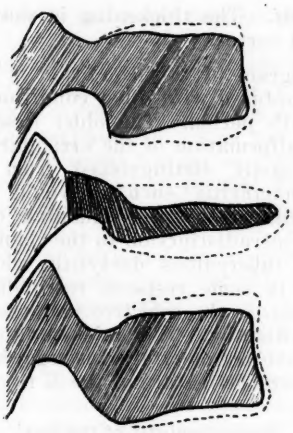

FIGURE I.
Diagram of Type of Spinal Osteochondritis Described by Calvé, Showing a Narrow Condensed Ossific Nucleus between two Normal Vertebræ.

that bony regeneration in osseous tuberculosis can frequently be demonstrated radiographically.

In Calvé's two cases the tuberculin and the Wassermann tests yielded no reactions and for the above reasons Calvé rejects tuberculosis as the underlying pathological change.

Though the radiographic appearance might suggest traumatic spondylitis or Kümmel's disease, there is definitely no history of trauma. That the symptoms in one case developed after scarlet fever may be of significance. The signs of less bone, more cartilage, greater opacity of the bony nucleus, the phenomenon of bony regeneration, together with the patients' ages, correspond so closely to the picture of Köhler's disease of the tarsal navicular and of pseudocoxalgia that Calvé believes that one is justified in including these cases among the osteochondropathies. The kyphosis he attributes to flattening of the cartilagnous exterior of the body when emptied by a decalcifying process of part of its bony nuclear interior, recalcification and corrective treatment removing the kyphosis.

Schlatter's Disease.

Schlatter's disease was first described by Osgood, of Boston, in 1903 and some months later by the surgeon whose name it now more frequently bears. A painful affection of the tibial tubercle of adolescents, it is seen more commonly in boys. The diagnosis is generally made radiographically. The X ray appearance of the upper end of the adolescent tibia is usually that of a fairly regular disc and the tibial tubercle calcifies as a button from the diaphysis. In an appreciable number of tibiæ, however, the tibial tubercle developes as a downward prolongation in the form of a tongue or beak from the epiphysis and when the tongue is present the patella tendon is inserted therein. More rarely fragmentation is seen in the tongue and at other times calcification in the tibial tubercle presents a feathery or striate shadow.

Schlatter's disease developes in knees characterized by the above irregular ossifications and on account of their variety it follows that the X ray pictures of this condition exhibit several forms. They all, however, show a soft tissue swelling about 2·5 centimetres (one inch) below the patella apex with irregular ossification in the region of the tubercle and often the soft tissues immediately surrounding appear cloudy. Generally a separation of the tongue of the epiphysis from the shaft, as shown by comparison with the opposite side, is included in the category of Schlatter's disease.

Some authorities hold that repeated every day trauma is the main cause, others prefer the infective theory, others again, because Perthes's disease and Schlatter's disease or Köhler's disease and Schlatter's disease have been found together in the one patient, maintain that it is primarily an epiphyseal dystrophy. Its similarity to other forms of osteochondritis is readily seen.

Fracture of the tuberosity is clinically similar, but the X ray picture with its definite fracture line is different. Bursitis posterior to the patellar ligament must also enter into the clinical differential diagnosis, but it is excluded radiographically.

Köhler's Disease.

Köhler's disease exists in two forms. It affects the tarsal navicular joint and the metatarsophalangeal joint.

Köhler's Disease of the Tarsal Navicular Joint.

Köhler's disease of the tarsal navicular joint has lately been so well described in THE MEDICAL JOURNAL OF AUSTRALIA of November 22, 1924, by Drs. Hodgkinson and Duke that I can add nothing to their excellent description. The radiographic picture is familar to all. Fairbank considers that this condition is a type of osteochondropathy different from either Perthes's disease or Schlatter's disease. Its close similarity to Calvé's *osteochondritis dorsi* will at once be recognized.

An interesting case has recently been reported by Abrahamson. It was that of a boy who was found by chance with delayed appearance of the centre of ossification for the navicular bone and who later developed typical Köhler's disease. The ossification of the navicular to normal proceeded rapidly under administration of a thyreoid preparation. While this may in some quarters be regarded as another triumph for endocrinology, it also, I think, casts some light on the pathology of the disease.

Another condition somewhat like Köhler's disease of the tarsal navicular is that known as Kienbock's disease. It has lately been included in the category of osteochondropathy. Here there is an isolated affection of the carpal navicular which radiographically manifests a condensation like Köhler's disease. I have here a copy of a radiogram of this condition kindly sent to me by Dr. Alex. Renander, of the Radium Himmet Hospital, Stockholm.

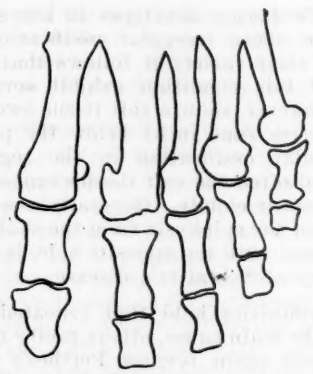

Figure II.
Diagram of Köhler's Disease of the Second Metatarsal. Note the widened joint space, irregularity of the articular ends of the bones and broadening of the distal end of the metatarsal.

Köhler's Disease of the Metatarso-Phalangeal Joint.

Köhler's disease of the second metatarso-phalangeal joint involves the articular surface of the base of the proximal phalanx of the second toe, seldom the third or both together, the metatarso-phalangeal joint, the articular surface of the head of the metatarsal, the head itself and the whole of the distal half of the metatarsal bone.

The disease is said by Köhler to be not especially rare and to be more often encountered than that peculiar to the navicular bone.

In 90% of cases the second metatarsal is involved, in 10% the third or both together; rarely both feet are involved. Two-thirds of the patients are from ten to eighteen years old, the remainder being older. In two-thirds of the cases the right foot is involved and in Köhler's series the condition was four times more common in females than in males.

The patient complains of pain in the region of the joint in question especially on weight-bearing or eversion of the foot. Usually there is a slight swelling of the soft parts on the dorsum in the vicinity of the lesion with tenderness on pressure on the dorsum or on the sole or both.

Radiographically the following appearances are seen. The shadow of the articular surface of the proximal phalanx loses its perfectly circular form and becomes irregular; the joint space is broader than normal. This is an important diagnostic point. The broadening is irregular, so that the fibular half of the space is often double that of the medial half (see Figure II.).

The metatarsal head loses its normal roundness. At first only more or less flattened, in older cases it manifests definite irregularity; the head is undoubtedly shortened as if the cap had been driven in and this naturally makes the metatarsal somewhat shorter than its fellows. In a typical case the whole distal half of the metatarsal is more or less altered and is definitely increased in circumference, so that the constriction normally seen at the neck is lost, this giving the distal half the appearance of the proximal half. The thickening is shared by both medulla and cortex.

The radiogram of this condition is typical and not easily confused with other conditions occurring in the growth period. The older cases with considerable malformation of the articular ends of the bones are easily distinguished from a primary chronic monarthritis, such as would be obtained following trauma, by the widening of the joint space. In contradistinction to the changes of osteomyelitis or tuberculous dactylitis which produce radiograms in some respects resembling those of this condition, is the selective increase in the size of the bone distally. This thickening of the distal half of the involved metatarsal is regarded by Köhler as a characteristic feature of the X ray picture.

Osteochondritis of the Heel.

Osteochondritis of the heel or apophysitis is now a well recognized clinical entity. It is described by Jones and Lovett in their treatise on orthopædics. Boys appear to be more often affected than girls and the affection is usually unilateral. No definite history of trauma is the rule. Local pain in the heel is present and tenderness may be elicited on one or both sides at the margin of the epiphyseal line, occasionally at the back. It may be associated with flat foot.

Radiographically the epiphysis is generally seen to be fragmented and its outline has a fluffy and eroded appearance with a similar irregularity of the adjacent surface of the *os calcis* (see Figure III.). These changes may be present on the other side, but without the production of symptoms. Cure takes place when the epiphysis unites and often before this.

In considering the X ray differential diagnosis it must be remembered that the *os calcis* epiphysis often ossifies physiologically from more than one centre. It is, moreover, conceivable that fracture through the epiphysis may take place, but Fairbank[5] with his large experience has seen no convincing example of this accident. Therefore, except in those cases in which the radiographic appearances are characteristic or are unilateral, the radiogram must certainly be examined in conjunction with the clinical evidence before one can arrive at a diagnosis.

Figure III.
Diagram of Osteochondritis of the Heel (Apophysitis) Showing a Fragmented Hypercalcified Epiphysis with Irregular Margins.

Osteochondritis of the Tibial Tubercle of the Tarsal Navicular.

A somewhat similar affection to the former is an affection of the tibial tubercle of the scaphoid. This is an entirely different condition from Köhler's disease of the scaphoid in which the whole bone is involved. The usual history is that a child or adolescent complains of a painful flat foot, the navicular tubercle being unusually prominent and tender. In Fairbank's series of cases girls are more often affected than boys and the frequency of occurrence is about the same on either side.

Radiographic examination of the affected side reveals a separate centre or centres for the tibial tubercle; this is generally present also on the unaffected side. There may be fragmentation with irregular ossification and the opposing edges and the intervening spaces show similar appearances to those of apophysitis of the *os calcis*.

Before diagnosing such a condition as osteochondropathy one must eliminate a traumatic separation of a physiological nucleus for the tubercle and fractures, not only of the navicular

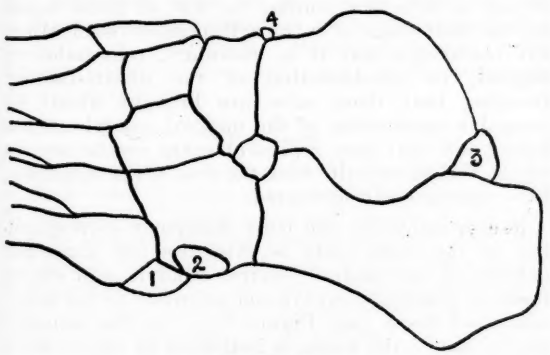

FIGURE IV.
Diagram Showing Relation of *Sesamum Peronei longum* (1) to so-called *os Vesalinum* (2); (3) represents the *os Trigonum* and (4) Pirie's astragalo-navicular ossicle.

bone through the tubercle, such as frequently occurs in ballet dancers, but also of the accessory ossicle itself. It is the persistence of the nucleus for the navicular tubercle which produces the *os tibiale externum*, one of the five important accessory ossicles of the foot.

The important accessory ossicles are: (i.) *os trigonum*, (ii.) *os tibiale externum*, (iii.) *os sesamum peronei*, (iv.) Pirie's astragalo-navicular ossicle, (v.) *os Vesalinum* (see Figure IV.).

Osteochondritis of the Base of the Fifth Metatarsal.

Conditions corresponding exactly both clinically and radiographically to the two foregoing, occur at the base of the fifth metatarsal. It is noteworthy that here again a separate centre of ossification may physiologically occur. Thurstan Holland, of Liverpool, believes that this epiphysis is a comparatively common one and is frequently present, but is generally missed radiographically on account of the usual method of exposure. He has adopted a technique for demonstrating this epiphysis more easily by tilting the outer edge of the foot 15° to 20° while its inner edge lies on the film.

The centre may persist throughout life, forming an accessory ossicle which has been termed the *os Vesalinum*. It is very doubtful whether Vesalius described this actual bone. Arthur Keith[6] believes that what Vesalius did describe, was an entirely different ossicle, the *sesamum peronei longum* which, developing in the tendon of the *peroneus longus* as it passes through its groove in cuboid, is not uncommonly seen in radiograms of the adult feet.

Usually about three millimetres long, it has been described as attaining a length of two centimetres. The *sesamum peronei longum* and the so-called *os Vesalinum* therefore lie in close relationship to one another on the plantar surface of the foot between the fifth metatarsal and the cuboid.

The insertion of the tendon of the *peroneus brevis* into the base of the fifth metatarsal and the *tibialis anterior* into the tubercle of the navicular suggests that in these cases trauma plays an important part. But the fragmentation and the irregular ossification indicate that there is the additional factor of osteochondropathy.

Osteochondritis of the Medial Sesamoid of the Great Toe.

Two typical cases were recently described by Renander.[7] The symptom was pain localized to the medial half of the anterior arches. It was not spontaneous, but was excited by weight bearing. Tenderness was present over the medial sesamoid bone beneath the head of the first metatarsal.

Radiographically it was seen that the medial sesamoid was fragmented into two or more pieces and was flattened in a dorso-plantar direction and exhibited a concavity on the dorsal surface corresponding to the convexity of the head of the metatarsal. The outline of the fragments is uneven and notched in fine waves. The structure of the fragments shows an unequal density. These appearances may wholly or in part be seen also in the lateral sesamoid and in those of the unaffected foot when the symptoms are unilateral. In the differential diagnosis by radiographic means we must exclude fracture of the sesamoid bone, deformation of the sesamoid bone in connexion with high grade deformities of the foot and accessory medial sesamoid bones.

Fractures of the sesamoid bones of the hallux, first described by Schuncke, have since then been reported many times. Those of the medial greatly predominate. In such cases the bony structure is normal, the characteristic division of continuity due to fracture will be evident and there should be a definite history of trauma. Köhler has described deformation of sesamoid bones in association with foot deformities.

Supernumerary sesamoid bones of the hallux are not at all infrequent. Thurstan Holland[8] and also Bizarro[9] have recently given adequate descriptions of these conditions. The X

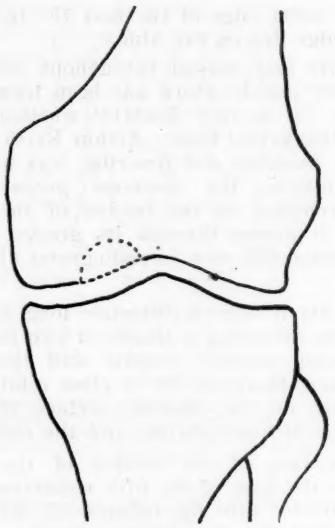

FIGURE V.
Diagram Showing Position of Gap in the Medial Femoral Condyle in *Osteochondritis Desiccans* of the Knee.

ray appearances of this type of osteochondropathy differ from those of other conditions resembling it in the presence of abnormal bony structure and the absence of a fracture line. The history of definite trauma is absent and the symptoms, I should think, would be somewhat different.

Osteochondritis Desiccans.

The term *osteochondritis desiccans* is used to describe a condition which in the present state of our knowledge, appears to be in an entirely different pathological category from the foregoing, but as it is called osteochondritis, I will briefly discuss it. The term was first used in 1888 by Franz Koenig to explain the origin of essential joint mice. By an essential joint mouse is meant a piece of cartilage or bone or a piece of bone and cartilage, lying free in the joint space or attached to the capsule by a pedicle and not resulting from trauma or hypertrophic arthritis. Similar fragments produced in tuberculous or tabetic arthropathy are not deemed joint mice. In an essential joint mouse the joint is otherwise free from disease and the history of trauma is indefinite.

They are found in two situations, namely, in the elbow joint and more commonly in the knee joint; their pathology has excited interest and has given rise to much research. Koenig was not satisfied with the traumatic theory of their production on the grounds that the history is indefinite, that it was hard to reconcile the positions of these lesions with traumatic production, that cases of joint fracture are rarely followed by joint mice and that in some cases the mice were covered with cartilage. It is difficult to conceive of a subcartilaginous fracture in these situations.

He maintained that there exists a spontaneous osteochondritis of unknown ætiology and that this produces the *corpora libera.* Latterly the osteochondritis adherents are admitting a trauma of little severity as a primary cause with localized necrosis and subsequent reactive inflammation separating the necrotic bone and cartilage. Freiberg[10] believes that the circulatory disturbance following trauma will account for the condition and endeavours to explain its occurrence at the medial femoral condyle and its rarity by the necessary concomitance of several elements, namely: (i.) the existence at this position in childhood and adolescence of a terminal arteriole, the *arteria genu media,* which ramifies over the posterior crucial ligament and the medial condyle; (ii.) a long tubercle of the tibial spine and (iii.) internal trauma occurring in the position of flexion and outward rotation of the tibia on the femur.

Lately an additional theory has been advanced by Ely, the distinguished American orthopædic surgeon. It is known clinically that joint mice make themselves evident most often in adolescents and young adults, at the time when the lower ends of the humerus and femur are nearing completion. Also microscopic examination of such a body often reveals a structure similar to that of fœtal bones during their stage of intracartilaginous ossification. Ely maintains that it is, therefore, reasonable to suggest, in consideration of the unsatisfactory theories, that these mice are brought about by irregular ossification of the medical condyle of the femur and that they represent extra ossific centres which, failing to unite with the rest of the epiphysis, have subsequently separated.

Radiographically the bony deficiency corresponding to the loose body is evidenced by abnormal outline of the medial femoral condyle and shows itself as a shallow excavation adjacent to the intercondyloid fossa (see Figure V.). In the humeral capitellum[11] the lesion is indicated by one or more sharply circumscribed areas of rarefaction, generally seen best in the antero-posterior view (see Figure VI.). Later these bony deficiencies may completely disappear, but generally certain more or

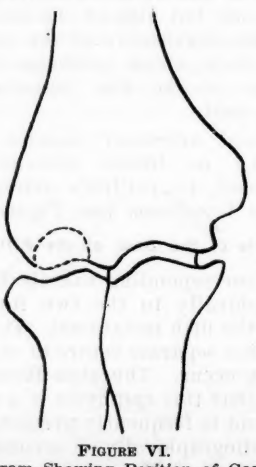

FIGURE VI.
Diagram Showing Position of Gap in the Humerus in Osteochondritis of the Elbow.

less distinct structural changes persist. In the humerus these are indicated by the capitellum outline being straighter or more curved than normal or sometimes as an irregular notching. In the early stages the joint is otherwise normal and there is no atrophy of the surrounding bones, thereby distinguishing it from tuberculosis. With the persistence of the presence of the loose body the characteristic changes of osteoarthritis appear. The loose body is often evident on the plate as an interarticular shadow. The alterations in the long bones may be seen before an intraarticular shadow can be demonstrated on the film.

When this latter shadow is present, subsequent examination may reveal that it has become larger and denser. The cause of growth of these loose bodies is interesting.

A frequent explanation is that their nutrition is derived from the capsule through a pedicle. But, as you know, Osgood, of Boston, and Strangways, of Cambridge, contend that cartilage is nourished not from the blood supply but from synovial fluid.

Mention should not be omitted of the fact that the sesamoid bone of the outer head of the *gastrocnemius* is sometimes mistaken radiographically for a loose body. Sesamoid bones in the internal head of the muscle and in the *popliteus* are very rarely seen.

Pathology.

I am reluctant to even touch on the pathology of these conditions as it is outside my sphere. But the subject is interesting and I should be grateful for the opinions of those present on their causation. Though the similarity amongst the various types of osteochondropathy is evident, still it is quite probable that there are somewhat different pathological changes corresponding to each type.

I shall briefly outline the theories of causation of pseudocoxalgia only, as this condition has up to the present awakened most curiosity. Harry Platt in 1922, after reviewing the evidence, expressed the opinion that infection was the cause. He claimed that pseudocoxalgia was the result of the same infection which in later years produced juvenile *arthritis deformans*. But the latter is a very much more rare disease than is pseudocoxalgia.

That it is a bone or osteochondral dystrophy resulting in irregular calcium deposition seems rational; but the fact that pseudocoxalgic changes may appear later in what was previously a normal head, makes one pause before strenuously advocating this theory *per se*.

The congenital hypothesis has lately been brought into prominence by the advocacy of Calot and Jansen. Calot is the French orthopædist whose name is associated with the volume "Indispensable Orthopædics" and with the Calotian fluid for injecting tuberculous sinuses. Jansen is the Dutch surgeon whose points for the early diagnosis of pseudocoxalgia I mentioned previously. Calot maintains that the condition is due to a congenital subluxation of the hip joint and states that some malformation of the hip joint is present in every case of pseudocoxalgia. Dr. Murk Jansen is more specific. He attributes all the changes seen on X ray examination in pseudocoxalgia to the mechanical fact that the curve of the hip socket does not correspond with the curve of the femoral head. The socket curve is flatter than the femoral head. This flattening is due to one of two causes. Either the bony floor of the acetabulum is too thick or the ischium is bent inward toward the midline; the centre of the hip socket being the centre round which movement occurs, this rotation producing *ischium varum*.

Trauma has its advocates, but the occurrence of Köhler's disease, Schlatter's disease and Perthes's disease in the one patient and the fact that rarely a history of trauma can be elicited, appear a little difficult to explain in this hypothesis. By trauma I mean one sufficiently severe to be noted and remembered. However, I do not see how we can eliminate the effect of everyday trauma, such as weight bearing or muscle pulling in several of these types. The weight bearing element is seen in the occurrence in the lower limb of Perthes's disease, both types of Köhler's disease and osteochondritis of the medial sesamoid, the tendon pull in Schlatter's disease, apophysitis of the *os calcis*, of the fifth metatarsal and of the tibial tubercle of the tarsal navicular. But everyday trauma certainly does not account for the whole picture.

Conclusion.

I must thank you for your patient attention to the recital of these somewhat unusual conditions. Some of them may seem a little pedantic, such as osteochondritis of the medial sesamoid of the big toe, but still I think that the recognition of these conditions in every fresh situation is important.

Their recognition I venture to think, opens up a new pathology and the fact that they are not tuberculous and recover spontaneously, renders necessary the revision of statistics of treatment and cure of tuberculosis by various methods which had been collected before these osteochondropathies were recognized.

To Mr. H. A. T. Fairbank, Orthopædist to the King's College Hospital, London, and to Dr. Robert Knox, Radiologist to that hospital, my thanks are due for allowing me access to their cases and films which form the basis of this paper and also for their kindly help and advice.

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DISABILITIES OF THE SHOULDER REGION.[1]

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Lesions about the shoulder joint are of frequent occurrence and result in very great limitation to the usefulness of the affected upper limb. Such lesions may be due to some infective cause, metastatic, tuberculous or syphilitic in origin or to new growth, but are mainly the result of some injury, direct or indirect. The disability may be of prolonged duration and this persistence is likely to be due, not so much to the nature or extent of the trauma as to a lack of appreciation of the pathological and surgical anatomy of the shoulder region and particularly of the soft tissues with a resulting unsuitable type of treatment. Such a result is illustrated in the following patient's history:

Case I.—M.B., aged sixty-one years, saw me on November 4, 1924. On September 4, 1924, he was knocked down by a motor car and sustained an injury (severe contusion) to the left shoulder and upper arm together with abrasions about the head and body. There was immediate loss of power in the shoulder movements and within the next three days much bruising in the shoulder and arm appeared. A skiagram revealed no injury to the bones. He was put to bed for four days with the injured arm lying by his side. When the patient rose from bed no sling or splint was applied, the only treatment used being massage. The shoulder movements gradually improved to the present stage, but there has been no improvement during the last four weeks.

On examination atrophy of the deltoid muscle and slight atrophy of the *supraspinatus* are present. No tenderness is present. Movements of the shoulder are mainly scapular. Abduction is limited to about 20°. His ability to place his hand to his lumbar region or the back of his head is very limited and reveals considerable difficulty in internal and external rotation. There are certainly some adhesions in the lower part of the capsule in addition to the muscle atrophy. This patient is a coachbuilder and is left handed and is dependent on his wages for his livelihood. Until his condition is remedied he will be unable to work.

From time to time patients with such stiff and frequently painful shoulders present themselves for treatment after being crippled for months. It sometimes happens that the patient himself shows a tendency to neglect the treatment ordered and to withhold that amount of cooperation without which the efforts of the surgeon are of little avail.

In dealing with affections in the shoulder region, it is necessary to bear in mind constantly the anatomical relationships of the various structures and in particular of the muscles and tendons of the shoulder. The shoulder joint with its shallow glenoid cavity and large humeral head is capable of the most extreme degrees of movement. The capsule is large and loose and does not hold the humerus against the scapula. With the muscle cut away the head of the humerus falls three centimetres (more than one inch) away from the body, apposition being maintained only by muscle support. The muscles of the shoulder are the deltoid which abducts the arm to the shoulder level and slightly flexes and extends; the *supraspinatus* (an abductor); the *infraspinatus* and *teres minor* (external rotators), these being inserted into the facets of the greater tuberosity of the humerus; the *subscapularis* (an internal rotator), inserted into the lesser tuberosity; and the *teres major*, inserted into the medial crest of the greater tuberosity. These muscles arise from the scapula, the deltoid being attached also in part of the clavicle. In addition the *pectoralis major* and the *latissimus dorsi* act as adductors, the latter being in part also an external rotator. The deltoid aided by the *supraspinatus* abducts the arm to the shoulder level and maintains it in relation to the acromion. Further elevation is carried out by a rotatory movement of the scapula, the rhomboids, *trapezius*, *serratus magnus* and *levator anguli scapulæ* being utilized. The development of the power of raising the upper limb, although dependent, above the head has been well described by W. C. Mackenzie[1] who states also that: "As the abduction and rotatory powers are recent, so also are they unstable, easily lost and regained in cases of injury or disease with difficulty." Indeed greater and more prolonged loss of power in the shoulder muscles can occur from apparently trivial causes than in almost any other group of muscles in the body.

The bursæ about the capsule of the shoulder joint are of great surgical importance. The subacromial bursa is a large sac (containing fluid which is almost constantly found) lying between the acromion and acromio-clavicular ligament on the one hand and the capsule and *supraspinatus* tendon on the other; the subdeltoid bursa (lying beneath the deltoid) communicating with it. These with the bursa beneath the tendon of the subscapular muscle which communicates with the synovial cavity of the joint, are the most in evidence. Gibson[2] has pointed out the necessity of recognizing minor degrees of injury to the brachial plexus, especially from the medico-legal point of view. The plexus is made up from the fifth, sixth, seventh and eighth cervical and first thoracic nerves. The upper trunk is formed from the fifth and sixth cervical nerves and supplies at the shoulder the deltoid, *supraspinatus* and *infraspinatus*, *teres minor* and *teres major*, *subscapularis* and clavicular fibres of the *pectoralis major*. The suprascapular nerve supplies the *supraspinatus* and *infraspinatus* and the axillary or circumflex the deltoid.

Lovett[3] summarizes the anatomical and mechanical conditions of the joint as follows:

[1] A post-graduate lecture delivered on November 11, 1924.

(i.) It is weight bearing in quadrupeds, weight supporting in man (the arm weight 4·5 to 6·75 kilograms). It is therefore a liability instead of an asset. The weight drags more or less vertically down. It is a purely hanging joint.

(ii.) The weight is supported not by the capsule, but by muscles (biceps, triceps, coracobrachialis and deltoid). If these are paralysed, the humerus drops from the acromion. In no other joint do the ligaments fail to hold the joint in place against gravity.

(iii.) The shoulder joint has the greatest range of movement; it moves in all directions and at no one time is much of the head of the humerus in contact with the glenoid. Extremes of movement are checked by tension of the capsule and ligaments and the support of tendons.

(iv.) The shoulder joint is not firmly connected with the skeleton, but is mounted on a movable base, the scapula. Abduction depends on fixation of the scapula by the *trapezius,* rhomboids, *pectoralis major* and *serratus magnus.* If even the *trapezius* is paralysed, abduction is slight or absent, even if the deltoid is good. The relation of scapular muscles to all shoulder movements is important and is the dominating factor in estimation of the effects of ankylosis.

(v.) The relation of certain muscles to joint structure is very intimate and important to remember. The subscapular tendon is closely merged to the front of the capsule and between it and the capsule at one point is a bursa communicating with the joint. The long head of the biceps passes through the capsule in a synovial tube. The *supraspinatus* tendon crosses the upper part of the capsule adherent to it to its insertion into the greater tuberosity. The *infraspinatus* tendon crosses the posterior surface of the capsule. The deltoid is separated only by the bursa and tendons mentioned.

(vi.) The subdeltoid bursa varies in size, does not communicate with the joint, lies very close to it, its floor being separated only by the short rotators, its roof is attached to the acromion and acromioclavicular ligament. It is therefore in most intimate relationship with the joint structures.

(vii.) The final point of surgical importance is the muscle balance. Two powerful muscles, the *pectoralis major* and *latissimus dorsi,* pull the arm to the side by a direct straight pull. Two others, one large, the deltoid, one small, the *supraspinatus,* pull the arm away from the side; both work under unfavourable conditions and depend on fixation of the scapula by the *trapezius et cetera.* The first action of the deltoid is to lift the arm vertically till the head of the humerus impinges on the upper part of the joint before it abducts; the *supraspinatus* adducts from the start. The effect of muscle balance is to favour the adducted position. The shoulder joint is thus a weight bearing, loose, ball and socket joint, largely kept in contact by muscle action and most intimately connected with important tendons and bursæ which enter into the structure. Injuries must be complex in most cases.

The clinical condition resulting from lesions of the shoulder region has received a variety of names. Stiff and painful shoulder, sprained or strained shoulder, subacromial or subdeltoid bursitis, painful traumatic shoulder and periarthritis of the shoulder are some of them. The ætiology, pathology, symptomatology and prognosis and treatment are identical in all these cases.

Trauma.

The cause of the condition may be trauma, as a strain when falling or received during the act of throwing a ball or a fall from a height or a weight falling from a height on to the shoulder, a fall on the outstretched hand. A head first precipitation is common to many of them.

Case II.—Mrs. B., aged fifty years, was seen on October 7, 1924. She fell on her outstretched right hand and felt pain in her right shoulder, but was able to use it. Two hours later she could not abduct the arm because of the pain. On examination there was tenderness along the border of the acromion. Abduction, internal rotation and forward flexion of the shoulder were limited and painful. External rotation and extension of shoulder backward were normal. There was some swelling anteriorly over the shoulder joint. Head of humerus was not dislocated and there was no sign of fracture. The arm was placed in full abduction on an abduction splint. The result was immediate relief of the pain. Passive movement was commenced with massage on the third day and the arm was kept continuously in the abducted position for three weeks, then only for three or four hours daily and all night, the arm resting in a sling meanwhile.

Active movement was started at the end of ten days. She now has a full range of active movement, although abduction is still somewhat painful.

In injuries sustained by a fall on the outstretched hand it is necessary to remember the possibility of shoulder injury in the presence of a fracture at the wrist or clavicle or a dislocation or other injury which may overshadow it. The shoulder may remain disabled long after the fracture is united.

Frequently there is an absence of a history of trauma and the cause of the affection of the shoulder is uncertain. An infective focus may be suspected as the ætiological factor.

Subacromial Bursitis with Calcified Deposit.

Subacromial bursitis with calcified deposit is exemplified in the following case:

Case III.—Miss L.B., aged forty years, was admitted on January 11, 1923. Two and a half months previously she suffered from onychia of the right thumb. The right shoulder gradually became painful and the pain resulted in limitation of abduction and rotation of the arm. There was some swelling over the shoulder. X ray examination revealed a large calcified deposit in the subacromial bursa. The right arm was placed on an abduction splint and given massage and by February 5 she had good abduction movement. A skiagram on March 5 revealed disappearance of the calcified deposit and the splint was removed, massage being continued. By March 15 she was very much improved, having full range of movement without pain. On December 31, 1923, she was again admitted with a painful left shoulder from which she had suffered for some weeks. She was unable to put her arm to her back, indicating limitation of internal rotation; abduction was limited and painful. A skiagram showed that again a calcified deposit was present. Treatment on similar lines was adopted and by February 18, 1924, she had full range of movement with very little pain. She is now quite well.

The occurrence of subacromial bursitis in both shoulders with a definite deposit in each and with an absence of a history of trauma is quite unusual and according to some authorities quite impossible.

Subacromial Bursitis of Infective Origin.

Subacromial bursitis of infective origin is illustrated in the following case:

Case IV.—Mrs. W., aged forty years, was admitted on November 3, 1924, complaining of pain in the left shoulder for several days. It was not severe at first, but on the night of November 1 the pain was agonizing and prevented any movement of the shoulder. The pain and limitation of movement were accompanied by swelling at the shoulder which had not been present at the first gradual onset. She was seen by a medical man who made a provisional diagnosis of abscess of the shoulder, as she had recently suffered from an inguinal abscess. On examination there was some swelling of the left shoulder in the deltoid region. An iodine eruption was present and there was slight tenderness over the deltoid. Abduction to about 30° was possible without pain and to 90° with pain. Active internal and external rotation were painful, passive rotation being less painful. Flexion and extension were painless.

The pathology of the condition is various and indefinite. If injury be the cause, then hæmorrhage into the soft parts, with bruising, rupture of tendon fibres, tearing of capsule, bruising of cartilaginous surfaces, bursitis with or without calcareous deposits and perhaps tearing away of small portions of the bony insertions of tendons may occur. There may be more or less injury to the nerves of the brachial plexus. Atrophy of muscles sets in immediately after the injury. Later adhesions occur in or around the joint. The injury to the soft parts always accompanies a dislocation of the shoulder or a fracture about the head or neck of the humerus and is the factor which is responsible for most of the persistence of disability.

Stiff Shoulder Following Dislocation.

Stiff shoulder following dislocation is illustrated in the following case:

Case V.—Thomas O'T., aged fifty-three years, was admitted on January 31, 1924. Twelve weeks previously he had sustained a dislocation of the left shoulder. This was reduced under anæsthesia within thirty minutes! The arm was immobilized for fourteen days. On admission he complained of limitation of shoulder movements and pain. On examination there was a free range of passive movement and no sign of the presence of adhesions. There was atrophy of the deltoid and *supraspinatus* muscles. Abduction movement was limited and painful. An X ray report showed that the head of the humerus was in the glenoid cavity in the normal position.

Fracture of Surgical Neck of the Humerus.

Fracture of surgical neck of the humerus is illustrated in the following case:

Case VI.—Charles G., aged fifty-three years, was admitted on May 24, 1923, suffering from an injury to the right shoulder sustained on the previous night. Skiagram revealed a fracture of the surgical neck of the humerus. The arm was put up in full abduction on an abduction splint without traction and in neutral rotation. On June 11 he had free range of passive movement and daily passive movement and massage were commenced, the arm still being kept in abduction. By July 23 he had a good range of active movement, but abduction to a right angle was painful, the pain still persisting on August 20. On September 3 he had full range of movement with little pain. He is now perfectly well and a recent skiagram shows perfect alignment and union.

Case VII.—Fanny C., aged fifty-four years, was admitted on July 9, 1923, with history of having fallen on her right shoulder with her arm to her side seven days previously. Skiagram revealed a fracture of the surgical neck of the humerus and the arm was placed on an abduction splint without traction. This patient suffered a lot of pain; there was a considerable amount of displacement of the fragments and she would have been better if traction had been used. External rotation passively was especially painful. By September 24 she had a good range of movement, but still some pain. Her shoulder movements are now useful and fairly free, but not quite normal. She has had the misfortune to sustain a compound fracture of her left wrist. Recent X ray examination reveals good firm union with slight inward bending at the junction of the surgical neck with the shaft.

The actual signs and symptoms present in any one case vary according to the structures involved. Limitation of active movement is present to a greater or lesser degree in each case, abduction and rotation movements being affected. While active movement is limited, there may be a free range of passive movement. Pain is present in the majority. It may be absent if the patient is at rest, being elicited only on attempts at movement or it may be more or less constant and worse at night. Tenderness, especially over affected muscles and tendons, slight swelling and atrophy of individual muscles may all occur.

The evidence of the existence of muscle strain lies in pain on active movement, especially if the voluntary contraction of the affected muscle is resisted and this pain is referred to the origin or insertion of the muscle. There is tenderness over ruptured fibres and perhaps signs of hæmorrhage are present. The abductors and internal rotators are most frequently strained. Remember the action of the most important muscles and an accurate diagnosis may be made. Periarthritis is a late stage in which there is limitation of abduction and rotation. The drag of the weight of the arm may give rise to pain. In some cases the immediate effects of the injury are slight, disability occurring gradually owing to increasing effusion and later organization of adhesions.

Sprained Shoulder.

Sprained shoulder is illustrated in the following case:

Case VIII.—Edward I. was admitted on August 25, 1924. He fell on his left shoulder two days previously. Subsequently he danced for some hours and on the morning of admission the shoulder was painful. On examination there was some swelling over the deltoid region and tenderness over the anterior border of the deltoid was present with limitation of abduction and rotation. Nothing abnormal was detected by X rays. An abduction splint was applied and early passive movement and massage were used. At the present time the patient has complete recovery of abduction and rotation.

Adhesions are indicated by persistent disability lasting for prolonged periods. Cleary[4] considers that the adhesions occur where the capsule is folded on itself or where it lies against the synovia-covered articular border of the bone (*vide* Case I.).

In subacromial bursitis the onset may be insidious and perhaps without obvious cause or the symptoms

may be present immediately after an injury. There is pain in the shoulder region, increased by movement especially abduction and gradually increasing in severity. At times the onset is sudden or with but slight warning, the pain reaching its height in a few hours or the pain may be observed for weeks and is never severe. The symptoms are apt to be intermittent and acute exacerbations may occur with swelling, tenderness and great pain on movement. It is in these cases that a calcareous deposit beneath the bursa and in the tendon of the *supraspinatus* muscle may be present, and will reveal itself as a shadow near the greater tuberosity in the skiagram. The deposit may disappear after treatment or even at times after an acute exacerbation of pain. The bursal region may be tender, but there is no sign of inflammation in the skin, except that the skin over the bursa may be hotter than elsewhere. Wasting of the deltoid, *supraspinatus* or other muscles may be apparent. Damage to the nerves of the brachial plexus may be done by any injury which forcibly stretches the head from the shoulder, and this according to the degree of injury to the nerve trunks results in a varying amount of loss of power to the muscles of the shoulder and arm. The actual lesion to the nerve trunks may not be thought of and as Gibson[2] points out, although gross lesions are not overlooked, minor degrees of damage to the upper trunk are more missed than observed.

Injury to the Brachial Plexus.

Injury to the brachial plexus is illustrated in the following case:

Case IX.—Mr. C. on December 24, 1923, was walking beneath a shop verandah. A motor car collided with the verandah post and a sheet of iron struck the left side of Mr. C.'s head, stretching it suddenly and violently away from his left shoulder. There was immediate and complete loss of power in the shoulder muscles, but no pain. The muscles of the forearm and head were intact and flexion and extension of the elbow where unaltered. The disability was very prolonged and I am not able to say to what extent recovery took place.

Forcible flexion of the head from the shoulder stretches the upper trunk of the brachial plexus and this is apt to damage any muscle supplied by the fifth and sixth cervical nerves. These are at the shoulder, the deltoid, *supraspinatus* and *infraspinatus, teres minor* and *teres major, subscapularis* and clavicular fibres of the *pectoralis major*. These cases are comparable to minor degrees of Erb's paralysis.

Diagnosis.

The existence of damage to the structures around the shoulder joint must always be looked for in the case of injury to any part of the upper limb from the hand to the clavicle. So many structures may be involved that an exact estimation may be difficult, especially in the early stages. But after the initial signs of contusion, bruising *et cetera* have disappeared, a diagnosis on accurate lines is of great importance. Atrophy of individual muscles may be apparent and the atrophied muscle is often tender, if not too deeply situated. Tests of function should be carried out in the light of the knowledge of the action of individual muscles. Limitation of abduction may be due to weakness of the deltoid or *supraspinatus* or both, of internal rotation to a lesion of the *subscapularis* or *pectoralis major*. If this movement is painful and there is no tenderness on palpation of the *pectoralis major*, the lesion is probably in the tendon of the *subscapularis* or the bursa of that muscle. Tenderness may be present at the lesser tuberosity.

Involvement of Rhomboid Muscles.

The rhomboid muscles are frequently involved when the patient complains of pain in the shoulder.

Strain of the *rhomboideus minor* muscle is illustrated in the following case:

Case X.—Eli C., aged sixty-three years, was admitted on June 6, 1924. Three days previously he was loading a log on to a dray when the horse suddenly moved on. He had pain in the right shoulder ever since and had been unable to work. On examination the pain was found to be along the medial border of the right scapula and beneath it. There was an area of tenderness to deep pressure over the third rib posteriorly five centimetres (two inches) lateral to the costo-vertebral articulation. There was occasional crepitus at this point. The appearance of the bones on X ray examination was normal. Improvement was very slow, with continued inability to work.

Diagnosis.

Riplogle[5] states that the diagnosis of sprain of the shoulder is too often made without an attempt being made to find a definite diagnosis. In one hundred and fifty cases of shoulder injury he noted twenty-six varieties of lesion. He found 20% were contusions, 25% sprains of various muscle groups or individual muscles, 18% dislocation or fractures and 6% subacromial bursitis. Sprain of the *rhomboideus minor* was more frequent than any other traumatic lesion, excluding severe contusions. It occurs during heavy labour, such as swinging a sledge, firing a furnace *et cetera*. There is sudden pain just median to the base of the spine of the scapula, lasting perhaps fifteen minutes, which returns in the evening and recurs on movement subsequently and a very definite tender point just internal to the base of the spine of the scapula. The arm cannot be abducted beyond 90° without pain. The presence of adhesions in the capsule may be inferred if free passive movement is limited in a considerable degree as in Case I.

Bursitis is probably present in greater or less degree in all severe injuries and is the usual condition found when the disability is of inflammatory origin. The presence of an X ray shadow indicating a calcified deposit is definite evidence of a bursitis, for example Case III.

Flexion and extension of the joint are possible and painless, but if arthritis is present, these movements are impossible. Tuberculosis of the shoulder joint is not very common and trauma is not of much ætiological importance. The onset is gradual, pain is intense and all movements are painful. Syphilis is very rare. In this disease pain is slight and swelling great, but X ray evidence is wanting.

In brachial neuritis all arm movements are free and not limited and the sensory disturbances are prominent and extend to the hand.

Tenosynovitis is painless when the patient is at rest or on passive movement; it is very painful with active movement.

Prognosis.

Prognosis should be guarded in cases of injury to the shoulder region followed by pain and limitation of movement. Recovery of full function is apt to be prolonged and it is necessary to explain this frankly to the patient and to insist on the fullest cooperation in the treatment. Much time is required for the treating of torn or stretched fibres of muscle and tendon and absorption of calcified deposits, the treating of bruised articular surfaces and capsule and the restoration of function of damaged nerves. If the causes which limit motion, can be found and eliminated, function will return. Many patients recover slowly with little treatment, but efficient treatment has the greatest effect in determining the amount of function regained and the time taken to regain it. If the arm is simply held in a sling or bound to the side and immobilized, stiffness of muscles increases and atrophy becomes prominent.

Treatment.

The treatment of stiff and painful shoulders depends on the correct estimation of the cause of the stiffness and pain and it is necessary to bear in mind certain general principles. We are dealing with a condition in which muscle weakness or muscle paralysis or joint weakness or all three are present. It is as necessary to consider not only the action of an affected muscle, but also that of its opponent, in order to treat the condition successfully. Thus, as Mackenzie[1] says:

> On a case of weakness of the deltoid, the surgeon will associate with that muscle the opposing adductor, namely the *pectoralis major*. He will recognise that there can be no recovery if the opposing pectoral be allowed to contract and will immediately guard against this occurrence.

Fixation of the arm to the side, the use of a sling or even voluntary failure to raise the arm through the upper range of abduction movements for any length of time after injury are unsatisfactory and responsible for much after trouble. They favour the formation of adhesions, muscle balance is not maintained and adaptive shortening of opposing muscles occurs and thus abduction and rotation movements are definitely limited. The weakness of the muscles is further increased by the stretching which takes place due to the weight of the arm.

The first great thing to remember in practically all shoulder lesions is that treatment by sling and liniments is contraindicated, weakness of the deltoid being prominent and persistent after treatment in the adducted position.

Much time and patience are required by both surgeon and patient. The treatment may have to extend into many months before full restoration of function takes place. This must be frankly explained to the patient and his fullest cooperation must be insisted on, even though the treatment be irksome to him.

Reliance must not be placed on methods of physiotherapy, such as massage and electricity. These are useful, but not necessary adjuvants.

The treatment needed in practically all cases of shoulder injury, recent or old, consists of:

(i.) Rest in the position of abduction.
(ii.) Early movement, active and passive.
(iii.) Manipulations if necessary.
(iv.) Massage and electrical treatment.

The placing and maintaining of the injured limb at once in the position of abduction is the great essential requirement for success, for the prevention of scapulo-humeral adhesions and of atrophy of the weakened abductor and rotatory muscles and contraction shortening of the opposing muscles. This is so, whatever the injury, whether it be simple strain of the deltoid, a contused shoulder, a tear of the insertion of the *subscapularis* tendon, an injury to the upper part of the brachial plexus, a subacromial bursitis or a fracture of the upper part of the humerus. It is necessary also in old cases after breaking or stretching of adhesions, tenotomies of contracted muscle, operations on bursæ or in muscle weakness after reduction of a dislocation.

Treatment of fracture of the head of the humerus by the usual treatment of fixation in abduction frequently results in adhesions and permanent muscle weakness, even if good apposition and alignment is obtained. Case VII. illustrates good functional results from poor alignment and Case VI. perfect function and alignment. Both patients were treated in immediate abduction.

Abduction can be maintained in two ways: (i.) By putting the patient to bed with the arm raised to shoulder level and placed on a pillow. I always instruct patients to tie a bandage round the wrist and fasten it to the head of the bed. This position is maintained at night in ambulatory cases when the splint is removed. (ii.) By the use of some form of abduction splint. This need not be complex. I show one made of malleable iron 2·5 by 0·9 centimetres (one by three-eighths of an inch) which was made by a local blacksmith in half an hour at a cost of six shillings and used on the patient in Case II. Many more complicated splints have been described. It is advisable sometimes when gradually increasing abduction is all that can be accomplished, to have an adjustable splint. The splint may be made of any suitable material and may be hinged. Plaster of Paris abduction is effective and comfortable. The patient is very comfortable in this position and I have found no one yet who has raised any objection. He is interested and amused by the unusual position of his arm and his confidence in final recovery is strengthened by the comfort and the restoration of at least that range of movement. The abduction splint is used until the patient is able actively to raise the arm to a height sufficient to clear the splint.

Movement of the shoulder joint should always be commenced as early as possible after any injury or in the treatment of stiff shoulders. The usefulness

of the shoulder is to be judged by the range of active, not passive movement. An inch of volitional is worth a full range of passive movement and if any voluntary movement is present, improvement up to full range can be obtained in most cases.

Mackenzie says:

> The term "paralysis of muscle" is at present much too loosely applied. It would be better to state that such a condition is extremely rare. A loss of part of the function of a muscle is, on the other hand, common. There is only one true test of muscle function, the volitional test scientifically applied.

Mackenzie insists that these active movements should be carried out in the recumbent position, with the arm moving on powdered cardboard to eliminate the influence of gravity and of friction. As power improves, the patient is gradually raised on pillows. Another method is to instruct patients to "climb the wall" with the injured arm. The patient stands facing the wall and with the hand on wall he gradually works it up as far as possible, then he turns the injured side to the wall. This rapidly increases abduction at the shoulder. Active and passive motion are combined, the extent at first never going beyond the previous suspension. Passive movements must be gradual and easy, never of the "pump handle" variety. If they are limited, manipulation under an anæsthetic is indicated (Case I.). As some force is required, it is necessary to guard against the occurrence of fracture or dislocation of the humeral head. The object of the manipulations is to break up all adhesions which have formed in and around the joint and thus free the parts for their full range of motion.

Sir C. Gordon Watson[6] says:

> From time to time we see opportunities missed by the practitioner—opportunities which, given the chance, the bone setter would not be slow to use. Take the case of a man whose shoulder remains stiff for several weeks after an injury. The surgeon examines him and finds no evidence of fracture, no sign of inflammation. He prescribes rest and liniment and says the shoulder will soon get well. He makes light of a complaint which is a serious handicap to the patient. But adhesions will not yield to rest and liniment; as the weeks go by the shoulder does not cease to ache at night nor can the patient raise his arm to dress himself. Confiding friends advise a bone setter. The bone setter recognises the condition, but he tells the patient that "the small bone of the shoulder is out." He manipulates the joint and snap go the adhesions. The patient hears the "snap" as the "bone" goes in and is at once convinced beyond argument of the ignorance of the surgeon and of the remarkable skill of the bone setter.

Before these manipulations are attempted, active arthritis must be excluded. Anæsthesia is necessary to secure complete muscular relaxation. The force used must be slight and gradually applied and a full range of movement must be obtained to prevent relapse. Assistance is necessary to anchor the scapula and support the head of the humerus. Slow abduction is carried out, the scapula being allowed some movement after 90° is secured. With the elbow flexed full internal and external rotation is accomplished. Then full circumduction is carried out. The arm is fixed in abduction and active movement is started at once and done many times daily to all extremes.

After muscle power is restored, massage, baking and electrotherapy can be used to improve the condition of the muscle fibres.

Operative treatment is very seldom required. It has been done mainly for the cure of bursitis, tendon contraction and unreduced or recurrent dislocation of the humeral head.

Conclusions.

(i.) Stiff and painful shoulders are of relatively frequent occurrence and are the cause of much disability. Very brief attention is given to the condition in ordinary surgical textbooks.

(ii.) A knowledge of the anatomy of the shoulder is essential for the efficient treatment of and the prevention of prolonged disability after shoulder injuries.

(iii.) Treatment of shoulder injuries by immobilization in the position of adduction by sling or bandage is contraindicated.

(iv.) Good results in nearly every case of shoulder injury can be obtained by resting the limb in the abducted position.

(v.) The use of liniments, massage and electrotherapy are of secondary importance.

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(2) Alexander Gibson: "The Painful Traumatic Shoulder," *The Journal of Bone and Joint Surgery*, Volume IV,. 1922, page 552.

(3) R. W. Lovett: "The Diagnosis and Treatment of Some Common Injuries of the Shoulder Joint," *Surgery, Gynecology and Obstetrics*, Volume XXXIV., 1922, page 437.

(4) E. W. Cleary: "Restoration of Function After Certain Injuries of the Extremities," *Surgical Clinics of North America*, Volume II., April, 1922, page 514.

(5) J. P. Replogle: "Sprains of the Rhomboideus Minor," *Annals of Surgery*, Volume LXXVI., 1922, page 641.

(6) C. Gordon Watson: "Bone-Setting and Manipulation of Joints," *The Clinical Journal*, Volume LI., 1922, page 217.

Reports of Cases.

A CASE OF GUMMATA OF THE URETHRA.

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The patient, a male, aged forty years, had been married six years, but had no children. He was referred to us on account of a urethral discharge associated with periurethral nodules. There was no history of venereal infection.

The patient first experienced trouble in 1915, when the right testicle began to increase in size. The swelling varied in size from time to time, but in 1923 it became much larger and painful. Eight months before seeing us he consulted a surgeon of repute who reported aspirating a litre of fluid from a hydrocele and removing the right testicle for undoubted tuberculous disease. About the same

time a painful nodule developed at the penoscrotal angle of the urethra. This was followed by the appearance of other similar masses in the anterior portion of the urethra. According to the patient these masses varied in size from time to time. All were painful, especially during erection. There was a mild and intermittent frequency of micturition.

On examination there was a small sero-purulent urethral discharge, slightly blood-stained. The urine was clear, but contained shreds of sero-pus. Nine nodules, the size of a pea, were present between the *meatus urinarius* and the penoscrotal angle. One on the left lip of the meatus could be seen to have ulcerated into the urethra, leaving an irregular opening with greyish base. A urethroscopic examination was not possible owing to the constriction of the urethra. On examination *per rectum* the seminal vesicles and prostate appeared normal; the expression from these glands contained no pus. Smears and cultures of the urethral discharge contained only the Gram-positive diplococcus so frequently seen in chronic urethral discharges. No tubercle bacilli were noted on smears of the urine deposit or on injection into guinea pigs. This latter examination was kindly carried out by Dr. Ferguson, of the Board of Health. There was no reaction of the serum to the gonococcus complement fixation test, but it reacted strongly to the Wassermann test.

After a first injection of "Arsenobenzol" the nodules decreased in size considerably and after a second injection and within two weeks of commencing the treatment the ulcer was healed and the nodules dispersed. There was no further urethral discharge and the urine remained clear without shreds.

From the above circumstances it would appear that the lesions observed in the urethra were gummata.

Reviews.

A HANDBOOK ON IMMUNITY BY A CANADIAN SURGEON.

One would like to think it a sign of the times that a practising surgeon should write a book of three hundred and twenty-one pages on such a "crazy" subject as immunity. Whether that be so or not, Fraser B. Gurd's book is, in his own words "a study of the phenomena of hypersensitiveness and tolerance and their relationship to the clinical study, prophylaxis and treatment of disease."[1] For many years he has made the study of infection and the reaction of the tissues to irritants his special interest and hobby. A large section is devoted to anaphylaxis which in his opinion constitutes the first stage of the immune reaction and though under very exceptional circumstances a danger to the life of the individual, yet it serves a useful purpose in that, in consequence of hypersensitiveness of the tissues to the complex protein molecules constituting bacteria, the bacterial bodies are immediately recognized by the tissue as irritants. The normal response of the tissues to the presence of small particles of irritant substances is focal hyperæmia, accumulation of leucocytes and phagocytosis of the irritant particles. A proper appreciation of the allergic phenomenon and its relation to anaphylaxis and tolerance places the prevention and treatment of infection by means of bacterial or other protein preparations upon a rational basis. Without a working hypothesis the production and control of the immune state becomes not only difficult but dangerous.

No less than two hundred and seventy pages are devoted to theoretical considerations, the principles of immunity, whilst only about fifty deal with the practice of immunity.

Beginning with general considerations, the author divides irritants into three classes: diffusible irritants, such as bacterial exotoxins; colloidal irritants, such as bacterial proteins and foreign sera and insoluble irritants such as carbon and metallic particles. The reaction of the host may be serological or cellular or both. Only such cells as can combine with heterologous protein molecules, can be injured by them and only such cells as normally possess affinities or receptors are concerned in the production of antibodies. The essence of the author's belief is that tolerance follows the hypersensitive state because the interaction of antigen and antibody produces a toxic substance against which a second antibody is produced and this second antibody confers protection against intoxication. The immune state is usually, however, a state of hypersensitiveness, bacteria being instantly recognized as foreign and as readily dealt with both by the small amount of humoral antibody available and by further production and also by the focal cellular counter attack. The non-immune state is usually that in which the host does not recognize the invasive foreign protein so that a period of incubation is possible. This period ends only when the antibody reaction begins and the interaction of bacterium and antibody, producing toxic substances, initiates the disease. It will be seen that the author follows Vaughan rather closely in his interpretation of immunity.

In the rather brief section on practical applications he hopes for much from Huntoon's solution of serum-free antibody in the treatment of lobar pneumonia. Washed precipitates from mixtures of all types of pneumococci and their corresponding horse antiserum are heated in a weakly alkaline medium. The antibody is said to be dissociated from the precipitate which is separated by centrifuging. Some good results are quoted. The use of large quantities of specific horse serum intravenously in pneumonia has unfortunately not met with universal approval by clinicians. Attempts such as these to reduce the amount of horse protein are worthy of encouragement since no great advance in the treatment of pneumococcal infections has been made since the Rockefeller work. The book is altogether a painstaking work to be highly recommended and we would wish that more surgeons had such intellectual hobbies. Also let pathologists look to their pastures, others harvested in this field before them and will do so again.

[1] "Infection, Immunity and Inflammation," by Fraser B. Gurd, B.A., M.D., C.M., F.A.C.S.; 1924. St. Louis: The C. V. Mosby Company. Royal 8vo., pp. 329. Price: $5.00.

THE WORK OF AN OLD MASTER.

"Selected Papers, Surgical and Pathological," by F. T. Paul is the outcome of a decision of the surgeons of Liverpool to express their admiration of the work of Mr. F. T. Paul on his seventy-fifth birthday.[1] The papers in this volume were written between 1881 and 1913 and they appear in chronological order.

The surgeons of Liverpool are to be congratulated for their excellent presentation of the work of an "Old Master," for as such will this volume be looked upon by surgeons.

Reading between the lines in these papers one will gain an insight into the many-sided character of Mr. Paul's genius. He is at once anatomist, physiologist, pathologist, craftsman, clinician, philosopher, in short he combines the many qualities that go to make the perfect surgeon.

Mr. Paul cut his own sections and the illustrations prove that they were excellent. The amount of research he did was extensive and this volume proves that a lack of sound training in the fundamental sciences (more particularly normal and pathological histology) is the reason why more research is not carried out by the average surgeon.

Surgeons will read with interest the story of the introduction of Paul's tube and Paul's operation for malignant diseases of the large bowel. They will see that its operative treatment as practised today depends on the sound principles laid down by Mr. Paul.

Each chapter of the book is of very great interest and among the many subjects dealt with are syphilis, appendicitis, rodent ulcer, tumours of the thyreoid *et cetera*. To review each of these would take much space and surgeons and pathologists alike will most profitably do this for themselves. A portrait of the author would have enhanced the value of the volume.

[1] "Selected Papers, Surgical and Pathological," by F. T. Paul, D.Sc., Liverpool (Hon. Caus.), Ch.M., Liverpool, F.R.C.S., England; 1925. London: Baillière, Tindall and Cox. Demy 8vo., pp. 292, with illustrations. Price: 15s. net.

The Medical Journal of Australia

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Unethical Conduct.

The lay public does not distinguish between what is known as medical ethics and etiquette. Recent correspondence in the columns of this journal appears to indicate that some medical practitioners regard breaches of medical ethics merely as matters of bad form or departure from established custom. It has even been suggested that medical ethics consist of academic rules that are ignored by prominent as well as the less recognized members of the profession with impunity. Unfortunately unethical conduct is just as difficult to prove as criminal behaviour. Offenders seem to realize that they run small risk of having to defend themselves on a charge of having broken a rule of ethics, because of the difficulty of procuring sufficient evidence to establish the charge.

The constitution of the British Medical Association provides for the establishment of an ethical committee called the Central Ethical Committee whose duties include the investigation of and report on alleged breaches of ethical rules. The Association has power to expel any of its members whose conduct has been found to be detrimental to the honour and interests of the medical profession or calculated to bring the profession into disrepute. Every Branch and every Division of the Association is encouraged to adopt rules of procedure to be followed in all ethical inquiries. The conduct need not amount to what is known as "infamous conduct in a professional respect" for the proper tribunal to deal with offences of this nature is the General Medical Council or in Australia those Medical Boards which have legal powers analogous to the powers of the General Medical Council. The Central Ethical Committee of the British Medical Association has in the course of years conducted a large number of inquiries and out of its decisions an ethical code has been set up. The Committee has received guidance from the decisions of the General Medical Council and from the common sense of its members. In principle it may be submitted that conduct that is calculated to disturb the relations between a medical practitioner and his patient or to damage the interests of the latter, constitutes unethical behaviour. The basis of medical ethics is found in the Hippocratic oath. No practitioner may do anything that might bring pecuniary advantage to himself if the act is detrimental to the welfare of his patient. Boastful claims of special skill are therefore proscribed, especially if the boaster has not equipped himself by special study and accumulated experience. It has been determined that the only safe method of combating the practice of misleading patients by boastful claims of exceptional knowledge or skill is to forbid all kinds of advertising. The charlatan publishes blatant assertions of peculiar ability or of knowledge of special remedies. The honest medical practitioner shares his knowledge with his colleagues and if he is particularly gifted or unusually dexterous, his successes will soon advertise the fact. It is unnecessary for him to advertise either directly or indirectly. He is forbidden to allow himself to be interviewed by newspaper reporters nor may he permit laudatory or even colourless notices of his professional doings or opinions to appear in the lay press. The several Branches of the British Medical Association in Australia have quite stringent rules concerning all forms of advertising by medical practitioners.

The ethical rules are not matters of opinion or fads. They represent the considered findings of a very large number of the most upright and the most conscientious members of the medical profession during the past century or more. There is therefore no serious challenge concerning the justification of these rules. The real difficulty arises in regard to the machinery for discovering and punishing offences. Under ordinary circumstances an inquiry into alleged misconduct follows a complaint. If no complaint is laid, no inquiry is held. This means that unless someone is prepared to undertake a task that is always objectionable and at times humiliating, the offender is not checked in his baneful practices. The only way to deal with ethical

offences of the nature of direct or oblique advertising with any prospect of success is for the Branch Councils to watch the lay newspapers for indications of the practice and to require every medical practitioner whose name is published in connexion with professional matters, to explain the circumstances. The inquiries would have to be conducted without fear or favour. The most distinguished as well as the least "well recognized" practitioner should be brought before the bar and an impartial inquiry instituted. Feeble excuses of ignorance as to how the information was obtained or how a portrait was secured should not be accepted. Leniency inevitably leads to encouragement of others. The Branches of the British Medical Association are strong enough to stop the practice. But unless they are courageous enough to deal firmly with each and every offender and to mete out the appropriate punishment where and when ever it is due, the time will come when they will not be able to hold an inquiry at all. A few brought to book would act as a deterrent and would soon dispel the confidence of those who sail close to the wind or even cross the line. The time has arrived when serious steps should be taken to prevent rather than to forbid advertising by medical practitioners.

Current Comment.

BACTERIA AND SURFACE TENSION.

In 1805 Thomas Young elaborated the hypothesis that the surface of individual drops of a fluid possesses a definite tension on the rest of the fluid after the manner of an elastic membrane. This view received experimental confirmation by Van der Mensburgh in 1868. He plunged a rectangular wire frame into soap solution. When the frame was withdrawn a film of soapy fluid was seen to occupy the interior. He then placed a fine thread circle on the fluid film. On pricking the fluid within the thread, the latter assumed a rounded shape which represents the largest surface possible for a body with a given circumference (length of outline). This is caused by the assumption of the smallest surface of the fluid contained.

It has been shown that the surface tension of one fluid is influenced by the electrolytic properties of the surrounding fluid. Thus if a drop of fluid is introduced into a mass of the same fluid, the surface tension in the two fluids remains in equilibrium. The tension of the surface of a drop of a given fluid can be increased or diminished by immersion in a fluid of different composition, according to whether the ions tend to pass from the drop into the surrounding fluid or into the drop from the surrounding fluid. Surface tension of a fluid is to some extent dependent on the viscosity of the fluid, on its electrolyte content and on the degree of cohesion of the solid particles suspended in the fluid.

Rhumbler found that if a drop of clove oil be placed in a mixture of alcohol and glycerine, the surface tension of the clove oil is changed by the alcohol, with the result that the drop assumes movements similar to those of amœbic cells. Again, if a small mass of mercury be placed in a dish filled with a very dilute solution of nitric acid containing a small crystal of bichromate of potash, the bichromate will dissolve and the yellow cloud will gradually approach the mercury. As soon as the yellow cloud reaches the mercury, the latter elongates towards the crystal and tends to move *in globo* towards it. All these changes in shape and position are the manifestations of surface tension.

Increasing attention has of late years been directed to the manifestations of surface tension in the body and variations of surface tension have been sought as the explanation of many phenomena. Thus Gideon Wells sought to explain leucocytic chemiotaxis in the terms of surface tension. The chemiotactic substances diffusing towards the leucocyte will lower its surface tension on the side on which they come into contact. Pseudopodia will be thrown out and the leucocyte will move towards the concentration of chemiotactic substance. This motion will continue until the concentration of chemiotactic substance is the same on all sides of the leucocyte. That this view is held by many as being incorrect on account of the fact that it does not explain selective chemiotaxis need not be discussed at present.

The effects of surface tension on bacteria were first studied in 1919 by Larson, Cantwell and Hartzell. They found that reduction in surface tension of media inhibited the growth of such organisms as streptococci, pneumococci and the anthrax bacillus. Ayers, Rupp and Johnson in 1923 suggested that it was possible by noting the effects of variations in surface tension to differentiate various types of streptococci.

Dr. Martin Frobisher, junior, has recently published an interesting article on the relations of surface tension to bacterial phenomena.[1] He begins by quoting MacCallum to the effect that surface tension is the most powerful and important of all forces concerned in the life of animal and vegetable cells. He reviews the literature in regard to the influence of surface forces on bacteria and adds that his work was undertaken to provide a foundation for future investigations. His surface tension measurements were made with a du Noüy tensiometer. This instrument measures the pull on a platinum ring of the surface of the liquid under

[1] *The Journal of Infectious Diseases*, January, 1926.

investigation. The pull is transmitted through a lever fixed at right angles to a twisted steel wire, the tension of which is registered on a dial. Dr. Frobisher points out that in drawing conclusions from measurements of surface tension it is necessary to bear in mind certain limitations of the method. The air-fluid interface is the only place at which with the means at hand it is possible to measure the surface tension of the fluid. This interface may be very different from the cell-fluid interface in its measurable surface tension and in the physical and chemical properties of the layer of fluid immediately adjacent to the cell. In other words, a substance may exert some influence at the cell-fluid interface which is not manifest at the air-fluid interface. The determinations were made at a temperature of 20° C. with one cubic centimetre quantities of fluid. Experiments were carried out to determine the suitability of certain reducing agents of surface tension. It was found that sodium oleate is the most effective reagent and comparatively inert from the point of view of bacterial metabolism. Sodium ricinoleate is similar to sodium oleate, but not as powerful. Iso-amyl alcohol was found to be more powerful than the two already mentioned, but it is poisonous to some organisms, such as *Bacillus typhosus*. Sodium glycocholate and bile are moderately active in lowering surface tension, but are metabolized by some organisms. Controls consisted in the use of a number of substances of totally unlike chemical composition and controls on sterility were of the usual type.

A series of observations were undertaken with *Bacillus typhosus*, Morgan's bacillus No. 1 and *Bacillus aerogenes*. The surface tension of the cultures with no reducing agent in each instance were 68·1, 66·1 and 70·1 dynes, the hydrogen ion concentration of each culture being practically identical. To a similar culture of each organism 1% sodium oleate was added and to another culture 1% sodium glycocholate. Estimations of the number of organisms in the cultures were made after various intervals of incubation. The figures obtained for *Bacillus typhosus* and Morgan's bacillus were practically identical; growth had been greatly inhibited. With *Bacillus aerogenes* this was not the case. It is concluded that the ability of *Bacillus aerogenes* to grow at a low surface tension is a valuable and simple means of distinguishing it from *Bacillus typhosus* and Morgan's bacillus. Similar findings were recorded in regard to the diphtheria bacillus, the bacillus of Hoffmann and *Bacillus xerosis*. The first named is sensitive and will not grow well in a medium whose surface tension is below fifty dynes, and the other two are equally resistant to media of low surface tension. It is generally taught that pneumococci and streptococci are closely related biologically. Dr. Frobisher found that pneumococci are sensitive to surface tensions as high as fifty-three dynes, while streptococci are not affected by this surface tension. He claims that by this means it is possible to differentiate true pneumococci from pneumococcus-like streptococci. If luxuriant growth of the organism in question occurs in both plain and oleate media, the organism may be regarded as a streptococcus. On the other hand, if luxuriant growth occurs in the plain medium and little or no growth in the oleate medium, the organism is probably a pneumococcus. The method in his opinion also may have a purely scientific interest. It has been suggested that surface tension may affect cell membranes. If this should be true, the results of this work suggest that pneumococci, however much they may be alike in other respects, may be unlike in the structure of their cell membranes.

THE MEDICAL DIRECTORY.

Since the year 1915 no medical directory has been published in Australasia. Nearly every medical practitioner finds a medical directory a highly useful book of reference. Its value is naturally proportionate to its accuracy and completeness. That there is a real demand for such a book in Australasia cannot be doubted. About a year ago the Australasian Medical Publishing Company, Limited, considered the question of the practicability of compiling and publishing a reliable directory of all medical practitioners, together with information concerning medical institutions and other matters affecting the practice of medicine. A method of working was devised and in August, 1925, a circular was addressed to every practitioner registered in Australia and New Zealand. This circular contained a request for full information concerning the qualifications, past and present appointments, published works and military record of the recipient, in order that an entry could be made for the directory. The response to the first circularization was highly disappointing. In February the Directors of the Australasian Medical Publishing Company, Limited, resolved that steps should be taken to complete the preliminary work. A second set of circulars was sent out to those who had not filled in the details and returned them to The Printing House. Relatively few forms have been returned by the Postal authorities on account of incorrect or insufficient adresses. The number of replies received to date is still unsatisfactory. It will be recognized that repeated circularization on a large scale is expensive and involves long delay. We therefore appeal to all those who have not already done so, to fill in the forms and return them as soon as possible to the office of the company. A little collaboration on the part of medical practitioners will make all the difference between success and failure. At the same time we invite members to intimate whether or not they will require a copy of the book when it is issued. It is anticipated that it will be offered for sale at twenty-five shillings, but that if payment be made before publication the sum of twenty shillings will be charged. Unless unexpected difficulties arise, it is hoped that the 1926 Directory will be published in July or August. We look to the medical profession to assist us in rendering this work of service.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Non-Specific Treatment of Syphilis.

E. Finger (*Wiener Medizinische Wochenschrift*, January 2, 1926) relates his experiences with combinations of specific and non-specific drugs in the treatment of secondary and tertiary syphilis. First of all milk injections were used. This was followed by sodium nucleinate, gonorrhœal and typhoid vaccines. All gave good results with rapid disappearance of active symptoms and improvement in the blood reaction. Recurrences were very few in number. The best results, however, have been obtained since the author employed the malaria injection method of Wagner-Jauregg. Five to ten cubic centimetres of blood from a patient with tertian malaria are injected and the patient allowed to have from eight to ten rigors. The malaria is then controlled by intravenous injections of five cubic centimetres of a 10% aqueous solution of quinine bisulphate followed by a course of "Neosalvarsan." This treatment is of great value whenever the blood or spinal fluid continues to yield a reaction to the Wassermann test despite treatment. No recurrences have been noted. The author has been using it also for fresh infections and as a result of two years' work is positive that a patient in the early stage of secondary syphilis can be cured within ten to twelve weeks by a single course of "Salvarsan" and malaria.

Impetigo Contagiosa Neonatorum

D. L. Belding (*American Journal of Obstetrics and Gynecology*, January, 1926) describes his investigations and observations in connexion with a recent epidemic of *impetigo contagiosa neonatorum* at the Robinson Memorial Hospital, Boston. Three epidemics have occurred in eight years. In the second epidemic seventeen babies out of a total of two hundred and two became infected; two deaths occurred. In the fatal cases the usual symptoms of toxic absorption were noted. The disease was characterized by typical vesicular and bullous formation, generally commencing about the head, neck and hands and then extending to the folds of the groins and armpits. Large areas of skin became denuded in the babies who died. A special study was made of the ætiology of the disease and the question of transmission. The investigations are claimed to corroborate the views of previous observers, who attribute the cause to a virulent strain of *Staphylococcus aureus*. A pure culture of *Staphylococcus aureus* isolated from one of the lesions failed to produce skin lesions in guinea pigs and rabbits. The same culture caused only a non-vesicular inflammatory reaction in the skin of an adult, but a typical exfoliating lesion in the infant from whom the organism was originally taken. The cultural characters of the staphylococcus were regular. Whilst the principal source of human transmission was attributed to the nurse, attention was called to the viability of the staphylococcus and the consequent increased danger of communication through inanimate objects. It is recommended that the primary prophylactic measure in a hospital epidemic should be the individual handling of the healthy infants.

Ultra-Violet Light in the Treatment of Röntgen Ray Telangiectasis.

C. G. Lane (*Archives of Dermatology and Syphilology*, February, 1926) reports on the treatment of X ray dermatitis by the use of ultra-violet light with moderate pressure from a quartz applicator. The patient treated was so extensively affected over both sides of the neck and upper part of the chest that only certain areas on the neck and at the margins were treated. By starting with two-minute exposures increased to four and a half minutes, a flaccid bulla was produced which left on exfoliation considerably less teleangiectasis in the underlying skin than before treatment. It was noticed that the larger vessels were hard to remove. The skin atrophy and pigmentation remained the same and it was found advisable to avoid the treatment of areas of dense scarring and pigmentation owing to the possibility of causing necrosis.

Cutaneous Reactions in Leishmaniasis.

J. Montenegro (*Archives of Dermatology and Syphilology*, February, 1926) describes the results of tests on thirty-seven patients suffering with Leishmaniasis. An extract is prepared from a profuse growth of Leishman's or Nicolle's medium. The injection is made intradermally, about 0·2 cubic centimetre of the extract is injected. A reaction at the end of twenty-four hours consists in a rounded, congested area about two or three times as large as the original papule. The reaction lasts several days and disappears slowly. The patients did not complain of general symptoms. Reactions occurred in thirty-two out of thirty-seven patients. Out of thirty-six persons used as controls thirty-three failed to yield a reaction. No opportunity has occurred for testing patients who have been cured.

Creeping Eruption.

J. L. Kirby-Smith, W. E. Dove and G. F. White (*Archives of Dermatology and Syphilology*, February, 1926) in a paper on their investigations into the prevalence of a creeping eruption in Florida, claim to have isolated a nematode as the causal agent, which they have called *Agamonematodum migrans*. Creeping eruption has been the subject of many observations under various names, such as hyponomoderma, dermomyiasis, *epidermitis linearis migrans*. Early investigations attributed it to fly larvæ, *Gastrophilus myiasis* and a second group has been put down to the invasion of a nematode larva of the genus Gnathostoma. Only very rarely has the causal agent actually been isolated. In this third group, which is the subject matter for this paper, it was only after serial sections of pieces of skin had been made that success in isolating the nematode was obtained. The eruption which usually begins on the limbs, is characterized by an erythematous linear or serpiginous lesion which becomes crusted and otherwise complicated by scratching. It generally commences on the feet, legs, hands or arms, but often spreads over the whole body, the parasite travelling from 1·25 to five centimetres (a half to two inches) in twenty-four hours, generally in the deeper parts of the mucous layer of the skin. The length of the larva was approximately six hundred microns, while its maximum breadth was about twenty microns. The disease occurs more often in children and 50% of the cases are believed to have originated on sandy beaches. It is most prevalent in the summer months, especially following wet weather. The possible relation with sewerage disposal was suggested. Ethyl acetate and ethyl acetate collodion were found to be successful in the treatment of the majority of the cases.

Skin Eruption After "Luminal" Administration.

F. Parkes Weber (*British Journal of Children's Diseases*, October-December, 1926) reports a case of morbilliform and bullous eruption with jaundice following the administration of "Luminal" in a choreic girl. A well grown girl, aged thirteen years, had suffered from chorea for twelve months. She was given "Luminal" one gramme every morning. Fourteen days later a red rash was observed and the "Luminal" was discontinued. The eruption became worse and she was admitted to hospital. She was almost completely covered from head to foot with a florid morbilliform eruption (slightly purpuric in parts), the face about the eyes, nose and lips being especially affected. In addition there were numerous bullæ especially over the upper parts of the trunk and the upper extremities. The bullæ contained a deep ochre yellow serous fluid which yielded a strong diphasic reaction to the Van den Bergh test for bilirubin. The indirect reaction was stronger than the direct reaction. The sclerotics had a definite yellow tinge, the fæces were clay coloured and the urine deeply coloured with bile. A fortnight after admission to hospital there was no vestige of jaundice and the cutaneous eruption had quite disappeared. Desquamation followed the eruption. The child never seemed seriously ill. There was neither fever nor albuminuria. It must be men-

tioned, however, that the child's response to the Wassermann test was strongly positive. Her sister was suffering from interstitial keratitis and her father had a nervous disorder which the writer suspected was syphilitic in origin.

RADIOLOGY.

Epithelioma of Tongue.

C. REGAUD, Director of the Radium Institute, Paris, writes on radium therapy of the epitheliomata of the tongue and of the attendant adenopathy (*British Journal of Radiology*, B.I.R. Section, October, 1925). For four years at the Radium Institute radium has been the chief therapeutic agent in these cases and freedom from recurrence after three years has been looked upon as a cure. The author's figures show that one-fourth of the patients has been cured, while another fourth has been cured locally. Small ulcerations are treated surgically and when radium therapy fails and the case is still operable, surgical treatment is carried out, as a second treatment by radium is never so successful as the first. X rays only have given bad results in epithelioma. The principles which rule this treatment are enumerated; the author aims at distributing numerous weak radio-active foci in the cancer and around it, trying to create as homogeneous a field as possible. The γ rays only are used to avoid necrosis of tissue while continuous radiation over a long period is sought. An attempt should be made to obtain success with a single treatment. Radium needles have proved of great value and superior to emanation methods. In the treatment of affected glands, the radium is set in wax supports at three to four centimetres' distance from the skin and given intermittently and after careful ionometric measurement of dosages.

Dental Disease.

W. L. SHEARER and A. F. TYLER (*American Journal of Radiology*, September, 1925) write on the diseases originating at the gum margin. These conditions are very common and few people past middle age are free from some form of this infection. When the pus pockets are deep or when many teeth are involved, severe local symptoms and great systemic disturbances may result. A single pus pocket may become closed over and result in pus under pressure entering the Haversian canals and passing into the general circulation. Injury in cleaning teeth, bad occlusion, overhanging fillings or crowns and infection of the crowns of impacted molar teeth are the most frequent causes of infection. *Pyorrhœa alveolaris* is very common and cultures yield *Entamœba buccalis* with streptococci and staphylococci. The condition is worse in the lower jaw owing to the poorer drainage. In regard to treatment in early cases mechanical scraping will get rid of calcareous deposits and then some medical application and rigid care of the teeth results in great benefit. Regular visits should be made to the dentist. When the disease has advanced complete extirpation is indicated with suture of the muco-periosteal flaps.

Psoriasis Therapy.

J. O. PARKER (*Journal of Radiology*, October, 1925) deals with the X ray treatment of psoriasis. This dry and scaly condition is peculiarly stubborn to ordinary treatment. The author describes his experiences in treating several cases. No history of *lues* could be obtained and in one instance the serum did not react to the Wassermann test. None of the patients were cured but relief was given to all. With continuance of dosage the condition remains in abeyance in each instance, the average dose being about five milliampères of current at sixty kilovolts for ten minutes at twenty-five centimetres' distance without a filter. The author points out that the method is without danger and that apparently the disease is not transmitted to children if the parents are properly treated.

Ventriculography.

J. W. PIERSON (*British Journal of Radiology*, B.I.R. Section, October, 1925) discusses the early diagnosis and localization of tumours of the brain by ventriculography. Early diagnosis means efficient treatment and avoidance of extensive exploratory operation. The main symptoms fall into two classes (1) localizing symptoms, (2) symptoms of general pressure. A large percentage of tumours cast some shadow or cause some change in the skull. About 35% of tumours occur in the "silent areas" of the brain and cause only general pressure symptoms. Pressure on the ventricles is registered by changes in their size, shape and position and these can be demonstrated in skiagrams. If either foramen of Monro should be obstructed, the corresponding ventricle becomes distended as there is no other escape for the fluid and an obstruction of the aqueduct of Sylvius will produce dilatation of both lateral ventricles and of the third ventricle. The technique as performed by Dandy consists in making two small openings in the posterior portion of the skull in a position accessible to the posterior horns of the lateral ventricles. A needle is inserted and the fluid withdrawn from the ventricles in small quantities and an equal amount of air injected. After radiography the air should be withdrawn. Lateral, antero-posterior and postero-anterior skiagrams are taken and variations in the ventricular shadows noted.

X Ray Therapy for Post-Operative Pneumonia.

C. FRIED (*Klinische Wochenschrift*, January 1, 1926) states that the mortality of pneumonia following operations is very high. He gives the results of forty cases in which radiological treatment was adopted with only one death. Thirty-two of the patients were completely cured in a short time. Within twenty-four hours the general appearance and condition of the patients definitely improved, while the pulse and respirations were considerably reduced in rate. The temperature reacts in one of two ways. Usually within twelve hours there is a sudden drop to normal followed by a smaller rise and complete subsidence to normal within two days. Occasionally the initial fall occurs, but the temperature recurs and gradually falls by lysis to normal after three or four days. Coincident with the improvement in the general condition the local pulmonary lesion rapidly disappears. In more than half the cases all physical signs had cleared up within five days. In some cases resolution was slower and further radiation was necessary. If the original treatment does not reduce the temperature and improve the general condition, nothing is to be gained by further use of X rays. It is immaterial whether the chest condition is due to a broncho-pneumonia or a true lobar-pneumonia. Four patients suffered from pleuritic exudation and only one resisted radiological treatment.

Low and Moderate Voltages.

A. V. DESJARDINS, of the Mayo Clinic, contributes an article on radiotherapy at low and moderate voltages (*Medical Journal and Record*, December 2, 1925). The author points out that after the first rush of enthusiasm radiologists have settled to a more sober realization of the effects of radiations by short wave rays. Some tumours respond to short waves while others respond more readily to longer waves. For instance, various skin lesions respond to long wave therapy, yet are uninfluenced by the shorter wave radiations. X ray treatment must be adapted in quality as well as in quantity to the lesion under treatment. Low voltages are from fifty to a hundred peak kilovolts, moderate voltages from one hundred to one hundred and fifty peak kilovolts and high voltages from one hundred and fifty to two hundred peak kilovolts. For skin lesions eighty kilovolts are most useful and filtration may be used if the lesion is a thick one, otherwise no filtration is necessary. About 0·25 of a skin unit repeated in ten days is the dosage. In ringworm 1·25 skin units of unfiltered rays are necessary. Moderate voltages are useful in the treatment of lymphatic glands and certain types of malignant disease. High voltages are used in the treatment of more resistant forms of neoplasm, especially carcinoma and sarcoma. In this type of treatment an attempt is made to produce the greatest amount of absorption of X rays in the tumour mass itself and the shortest waves are used with high atomic weight filters. In leuchæmia treatment should be carried out by gradually increasing the voltages and thus producing better results than if one wave length is persistently used.

British Medical Association News.

ANNUAL MEETING.

THE ANNUAL MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held on March 25, 1926, at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, DR. R. B. WADE, the President, in the chair.

ANNUAL REPORT OF THE COUNCIL.

The Honorary Secretary presented the annual report of the Council and moved that it be received. The motion was carried. The report is as follows:

Annual Report.

THE COUNCIL presents the following report on the work of the Branch for the year ended March 25, 1926.

Membership.

The membership of the Branch is now 1,512 as compared with 1,423 at the date of the last Annual Report, showing a net increase of 89.

The additions have included: Elections and resumptions of membership, 122; removals into area of Branch, 41.

The losses have included: Resignations, 10; removals out of area of Branch, 41; default in payment of subscription, 16; deaths, 9.

The losses by death have been: DR. CHARLES MACLAURIN, DR. ERIC SINCLAIR, DR. THE HONOURABLE J. B. NASH, M.L.C., DR. F. PAIN, DR. C. ST. LEGER WILLIS, DR. J. R. MACCULLOCH, DR. J. MCLEOD, DR. E. H. BURKITT, DR. R. G. ALCORN.

Meetings.

Eight ordinary meetings of the Branch, including the Annual Meeting, two extraordinary meetings and eight clinical meetings were held; eighteen meetings in all. The average attendance was 61. Clinical meetings were held at the Royal Alexandra Hospital for Children, Royal Prince Alfred Hospital, St. Vincent's Hospital, Royal Hospital for Women, Sydney Hospital, Royal North Shore Hospital, Coast Hospital and the Broughton Hall Psychiatric Clinic. The extraordinary meeting of April 7, 1925, was concerned with the subject of infantile paralysis and the administration of the *Venereal Diseases Act*, 1918 (New South Wales) was discussed at the extraordinary meeting of July 2, 1925. The ordinary meeting of October 29, 1925, was held in cooperation with the Veterinary Association of New South Wales in conjunction with the Section of Hygiene and Preventive Medicine and the Section of Medicine. The meeting of December 10, 1925, took the form of a smoke concert to which the 1925 graduates in medicine were invited. The business of meetings during the year included twenty-four papers and addresses and numerous reports of cases and exhibits and lantern demonstrations.

Representatives.

The Branch was represented as follows:

(*a*) *Council of the British Medical Association:* SIR T. JENNER VERRALL, LL.D., Vice-President of the British Medical Association.

(*b*) *Representative Body* (1925-1926): Representative, DR. A. DAVIDSON.

(*c*) *Federal Committee of the British Medical Association in Australia* (1925): DR. J. A. DICK, C.M.G., DR. R. H. TODD; (1926), DR. J. A. DICK, C.M.G., DR. R. H. TODD.

(*d*) *Australasian Medical Publishing Company, Limited:* DR. GEORGE ARMSTRONG, PROFESSOR F. P. SANDES, DR. R. H. TODD.

(*e*) *Council of the Bush Nursing Association* (1925-1926): DR. R. B. WADE.

(*f*) *Council of the Royal Society for the Welfare of Mothers and Babies:* DR. R. B. WADE, PROFESSOR J. C. WINDEYER.

Council.

(*a*) The attendance of members of the Council and of the standing committees was as set out in the table on the next page.

(*b*) The representatives of the Local Associations of members appointed on the invitation of the Council to attend the regular quarterly meetings of the Council were as follows: DR. K. S. MACARTHUR BROWN (Central Western), DR. A. M. GLEDDEN (City), DR. W. A. H. BURKITT (Central Southern), DR. R. J. TAYLOR (Eastern Suburbs), DR. W. F. SIMMONS (Illawarra Suburbs), DR. R. M. KINROSS (Northern District), DR. G. M. BARRON (Northern Suburbs), DR. W. C. MCCLELLAND (South Sydney), DR. J. B. MOORE (Western), DR. E. H. M. STEPHEN (Western Suburbs).

Library.

DR. J. A. DICK, C.M.G., has continued to carry out the duties of Honorary Librarian. Donations of books and periodicals have been received from SIR ALEXANDER MACCORMICK, THE AUSTRALASIAN MEDICAL PUBLISHING COMPANY, LIMITED, THE UNIVERSITY OF MELBOURNE, DR. A. S. PATTON, DR. L. COWLISHAW and DR. A. J. BRADY. The volumes of the "Index Medicus" (1903 to date) have been obtained and arrangements have been made for the Library to be supplied with the annual volumes as produced. A parquetry flooring of inlaid woodwork has been laid in the Library and the walls and ceiling have been repainted.

Affiliated Local Associations of Members.

The following is a list of the Local Associations of members with the names and addresses of their Honorary Secretaries:

Balmain District: DR. J. E. SHERWOOD (Balmain).
Border: DR. R. A. ROBERTSON (Albury).
City: DR. H. A. RIDLER (36, College Street, Sydney).
Central Northern: DR. A. T. ROBERTS (Newcastle).
Central Southern: DR. R. G. WOODS (Goulburn).
Central Western: DR. K. S. MACARTHUR BROWN (Parramatta).
Eastern Suburbs: DR. R. J. TAYLOR, M.C. (Randwick).
Eastern District: DR. J. B. MCELHONE (Kempsey).
Illawarra Suburbs: DR. W. F. SIMMONS (Bexley).
Northern District: DR. J. S. F. BARNET (Armidale).
North Eastern: DR. A. M. ASPINALL (Lismore).
Northern Suburbs: DR. E. M. HUMPHERY (185, Macquarie Street, Sydney).
Southern District: DR. S. H. WEEDON (Wagga).
South Eastern: DR. H. H. LEE (Wollongong).
South Sydney: DR. J. G. HUNTER (Mascot).
Western: DR. W. K. DALE (Orange).
Western Suburbs: DR. J. F. WALTON (Summer Hill); Assistant Honorary Secretary: DR. W. M. A. FLETCHER (Haberfield).

Annual Meeting of Delegates.

The fourteenth Annual Meeting of the Delegates of the Affiliated Local Associations of Members with the Council was held on October 2, 1925, at the B.M.A. Library, Sydney. An account of the meeting appeared in THE MEDICAL JOURNAL OF AUSTRALIA, October 24, 1925, at page 516 and reports of the proceedings were sent to the Local Associations. The Delegates present at the meeting were as follows: DR. A. W. MOBBS (Balmain District), DR. A. T. ROBERTS (Central Northern), DR. K. S. MACARTHUR BROWN (Central Western), DR. A. M. GLEDDEN (City), DR. F. G. N. STEPHENS (Eastern Suburbs), DR. W. F. SIMMONS (Illawarra Suburbs), DR. E. W. BUCKLEY (Northern District), DR. O. A. DIETHELM (North Eastern), DR. G. M. BARRON (Northern Suburbs), DR. W. W. MARTIN (Southern District), DR. H. H. LEE (South Eastern), DR. E. H. LOXTON (South Sydney), DR. J. T. PATON (Western), DR. W. S. BROOKS (Western Suburbs).

Sections for Special Branches of Medical Knowledge.

The following is a summary of information in regard to the several Sections:

(*a*) *Section of Pædiatrics* (*inaugurated October* 4, 1921).

Chairman, DR. R. B. WADE; *Honorary Secretaries*, DR. W. VICKERS, D.S.O., and DR. H. G. HUMPHRIES. Meetings were held on April 23, 1925 (B.M.A. Building) (Annual); July 20, 1925 (Royal Alexandra Hospital for Children); September 18, 1925 (Royal Alexandra Hospital for Chil-

dren); November 20, 1925 (Royal Alexandra Hospital for Children); November 26, 1925 (B.M.A. Building), in conjunction with a meeting of the Branch and meetings of the Sections of Hygiene and Preventive Medicine and Obstetrics and Gynæcology.

Number of members at December 31, 1925, 77.

(*b*) *Section of Hygiene and Preventive Medicine (inaugurated January 3, 1922).*

Chairman, DR. ROBERT DICK; *Honorary Secretary*, DR. E. S. MORRIS. Meetings were held on March 27, 1925 (B.M.A. Building) (Annual); April 8, 1925 (B.M.A. Building) in conjunction with meeting of the Branch and meetings of the Sections of Medicine and Pædiatrics; October 25, 1925 (B.M.A. Building) in conjunction with a meeting of the Branch and a meeting of the Section of Medicine in co-operation with the Veterinary Association of New South Wales; November 26, 1925 (B.M.A. Building), in conjunction with meeting of the Branch and meetings of the Sections of Obstetrics and Gynæcology and Pædiatrics.

Number of members at December 31, 1925, 11.

(*c*) *Section of Orthopædics (inaugurated May 7, 1923).*

Chairman, DR. L. G. TEECE; *Honorary Secretary*, DR. D. J. Glissan. Meetings were held on February 5, 1925 (St. Vincent's Hospital); April 2, 1925 (B.M.A. Building); May 28, 1925 (B.M.A. Building), in conjunction with meeting of the Branch and meeting of the Section of Surgery; June 4, 1925 (B.M.A. Building); August 6, 1925 (B.M.A. Building); August 26, 1925 (Sydney Hospital), in conjunction with meeting of the Section of Surgery; September 3, 1925 (B.M.A. Building); October 1, 1925 (B.M.A. Building); December 3, 1925 (B.M.A. Building) (Annual).

Number of members at December 31, 1925, 17.

(*d*) *Section of Pathology and Bacteriology (inaugurated April 3, 1924).*

Chairman, DR. A. H. TEBBUTT, D.S.O.; *Honorary Secretary*, DR. C. H. SHEARMAN. Meetings were held on March 19, 1925 (Public Health Department); June 18, 1925 (St. Vincent's Hospital); October 15, 1925 (Medical School, University of Sydney), in conjunction with meeting of the Section of Neurology and Psychiatry.

Number of members at December 31, 1925, 27.

(*e*) *Section of Neurology and Psychiatry (inaugurated June 5, 1924).*

Chairman, Dr. A. W. CAMPBELL; *Honorary Secretary*, DR. J. BOSTOCK; *Honorary Medical Secretary*, DR. R. A. NOBLE. Meetings were held on April 27, 1925 (B.M.A. Building); July 16, 1925 (B.M.A. Building), in conjunction with meeting of the Section of Surgery; July 30, 1925 (B.M.A. Building), in conjunction with meeting of the Section of Obstetrics and Gynæcology; October 15, 1925 (Medical School, University of Sydney), in conjunction with meeting of the Section of Pathology and Bacteriology; December 11, 1925 (B.M.A. Building), Annual Meeting followed by annual dinner.

Number of members at December 31, 1925, 51.

(*f*) *Section of Oto-Rhino-Laryngology (inaugurated June 11, 1924).*

Chairman, DR. A. J. BRADY; *Honorary Secretary*, DR. G. R. HALLORAN. Meetings were held on April 21, 1925 (Sydney Hospital); August 11, 1925 (B.M.A. Building); November 30, 1925 (B.M.A. Building) (Annual).

Number of members at December 31, 1925, 18.

(*g*) *Section of Surgery (inaugurated July 30, 1925).*

Chairman, DR. E. T. THRING; *Honorary Secretary*, DR. E. M. FISHER, M.C. Meetings were held on February 25, 1925; (B.M.A. Building); May 28, 1925 (B.M.A. Building), in conjunction with meeting of the Branch and of the Section of Orthopædics; August 26, 1925 (Sydney Hospital), in conjunction with meeting of the Section of Orthopædics; September 16, 1925 (B.M.A. Building); November 18, 1925

ATTENDANCE OF MEMBERS OF THE COUNCIL AND OF THE STANDING COMMITTEES OF THE COUNCIL.

Office-Bearers.	Council.	Executive and Finance Committee.	Ethics Committee.	Organization and Science Committee.	Medical Politics Committee.	Medical Journal Sub-Committee (Executive and Finance Committee).
DR. GEORGE ARMSTRONG	4	10	—	—	—	10
DR. J. E. V. BARLING	2	—	7	—	—	—
DR. F. BARRINGTON	3	9	—	—	—	9
DR. GEORGE BELL, O.B.E.	4	—	9	—	11	—
DR. C. B. BLACKBURN, O.B.E.	5	—	5	—	—	—
DR. F. BROWN CRAIG (Honorary Medical Secretary)	4	—	—	11	—	—
DR. W. H. CRAGO (Honorary Treasurer and Premises Attorney)	6	12	9	4	9	12
DR. A. DAVIDSON (Ex-President)	1	—	—	—	—	—
DR. J. A. DICK, C.M.G. (Honorary Librarian)	6	10	—	—	11	—
DR. E. M. HUMPHERY	6	—	—	—	8	—
DR. A. W. HOLMES À COURT	5	—	—	11	—	—
DR. J. L. T. ISBISTER	5	—	7	—	—	—
DR. C. H. E. LAWES	4	6	—	—	11	1
DR. T. W. LIPSCOMB (Acting Honorary Secretary)	5	9	—	—	11	5
DR. R. J. MILLARD, C.M.G. (Vice-President)	6	12	8	—	10	5
PROFESSOR A. E. MILLS	3	—	—	6	—	—
DR. A. A. PALMER	6	—	11	—	—	—
DR. S. A. SMITH	5	—	—	8	—	—
DR. R. H. TODD (Honorary Secretary)	5	8	8	7	7	7
DR. R. B. WADE (President)	6	9	10	7	11	8
Number of Meetings Held	6	12	12	11	12	12

(B.M.A. Building) (Annual), in conjunction with meeting of the Section of Medical Literature and History.
Number of members at December 31, 1925, 33.

(*h*) *Section of Obstetrics and Gynæcology (inaugurated August 6, 1925).*

Chairman, Dr. R. Worrall; *Honorary Secretary*, Dr. A. J. Gibson. Meetings were held on March 4, 1925 (Sydney Hospital); June 3, 1925 (Medical School, University of Sydney); July 30 (B.M.A. Building), in conjunction with meeting of the Branch and meeting of the Section of Neurology and Psychiatry; September 2, 1925 (B.M.A. Building); November 26, 1925 (B.M.A. Building), in conjunction with meeting of the Branch and meetings of the Sections of Hygiene and Preventive Medicine and Pædiatrics; December 16, 1925 (B.M.A. Building) (Annual).
Number of members at December 31, 1925, 46.

(*i*) *Section of Medicine (inaugurated October 1, 1924).*

Chairman, Dr. J. Macdonald Gill; *Honorary Secretary*, Dr. A. J. Collins, D.S.O., M.C. Meetings were held on April 8, 1925 (B.M.A. Building), in conjunction with meeting of the Branch and meetings of the Sections of Pædiatrics and Hygiene and Preventive Medicine; June 29, 1925 (B.M.A. Building); October 29, 1925 (B.M.A. Building), in conjunction with meeting of the Branch and meeting of the Section of Hygiene and Preventive Medicine in cooperation with the Veterinary Association of New South Wales; December 18, 1925 (B.M.A. Building).
Number of members at December 25, 1925, 19.

(*j*) *Section of Medical Literature and History (inaugurated June 26, 1925).*

Chairman, Dr. R. Scot Skirving; *Honorary Secretary*, Dr. H. M. Moran. Meetings were held on June 26, 1925 (B.M.A. Building) (Inaugural); September 11, 1925 (B.M.A. Building); November 18, 1925 (B.M.A. Building), in conjunction with meeting of the Section of Surgery.
Number of members at December 31, 1925, 30.

The British Medical Association Essay Prize.

Notice was received of a British Medical Association prize for essays by students in the final year in medical schools in the British Empire outside the United Kingdom. Copies of the notice were sent with a covering letter of explanation to all the teaching hospitals for the information of final year students.

Federal Committee.

The Federal Committee of the British Medical Association in Australia met in Sydney on August 26 and 27, 1925, and in Melbourne on February 3 and 4, 1926. Reports of the proceedings of the Committee appeared in The Medical Journal of Australia, September 19, 1925, at page 380 and February 20, 1926, at page 220.

Australasian Medical Congress (British Medical Association) (Second Session).

The arrangements for the Second Session of the Australasian Medical Congress (British Medical Association), to be held on February 2 to February 9, 1927, at Dunedin, New Zealand, are in progress. The President of Congress, Professor L. E. Barnett, C.M.G., of Dunedin, visited Sydney on October 18 to 25, 1925, when he met the Presidents and Vice-Presidents of the Sections and discussed the work of the session with them. It is understood that the enrolment of New South Wales members of congress will commence at an early date.

The Medical Journal of Australia.

The Medical Journal of Australia as produced during the past year by the Publishing Company's own printing plant at the Printing House, Seamer Street, Glebe, has brought much credit to all concerned with its publication.

The Printing House has now for some time done all the printing for the Branch and the fine quality of its work has been appreciated also by members who have taken advantage of the opportunity of having their printing done there.

It is noted in the report of the Federal Royal Commission on Health that approval was given to a suggestion that the Australasian Medical Publishing Company, Limited, in addition to publishing The Medical Journal of Australia, should publish a popular health journal or magazine. A proposal for this to be done was made by the Council of the Branch to the Federal Committee and by the Committee to the Publishing Company some time ago and it is understood that the Directors of the Company contemplate giving effect to it.

Royal Commission on Health.

The Federal Royal Commission on Health, appointed January, 1925, to inquire into and report upon public health as a matter for legislation and administration by the Commonwealth, in conjunction with the States where necessary, completed its work and its report, dated November 30, 1925, was printed for the information of members of the Association in The Medical Journal of Australia, January 15, 1926. Most of the matters dealt with in the report are of direct interest to medical practitioners. The Federal Committee has asked the Councils of the several Branches to peruse the report and to instruct their representatives in the Committee in regard to any matters in it which they think should be considered.

Premises.

The B.M.A. Building has remained under the management of Dr. W. H. Crago in his capacity as "Premises Attorney," a position which he accepted in 1910 and has held continuously ever since. The management of the premises and the safeguarding of the financial interests of the Branch and of the debenture-holders in this undertaking have been Dr. Crago's assiduous care for the whole period. It is gratifying to note that already the mortgage on the Building has been paid off and the thanks and congratulations of the members are due to Dr. Crago for the satisfactory results of his efforts.

Although no notice has yet been received in regard to the matter, it is understood that the premises are to be resumed at an early date by the City Council in connexion with the widening of Elizabeth Street. The question of new premises is having the full attention of the Council.

Contract Attendance: Friendly Society Lodges.

(*a*) *Uniform Medical Certificates for Use by Lodges of All Orders.*

The convenience and economy of having one set only of certificate forms for completion by medical officers of lodges in connexion with sickness benefit instead of a different set for each lodge, has been apparent for many years, but until recently it has not been thought feasible to depart from the practice of each lodge having its own form. The Friendly Societies' Association have now taken the matter in hand and distributed to the lodge medical officers new forms which can be used in connexion with any lodge. A list of the medical officers, some six hundred in number, was supplied to the Friendly Societies' Association for the purpose.

(*b*) *Attendance on Juvenile Members of Lodges.*

At the request of the Friendly Societies' Association the question of the reduction of rates for attendance on juvenile members of lodges was further discussed at a conference between representatives of the Friendly Societies' Association and members of the Medical Politics Committee held on January 15, 1925. At the conference the following proposals were approved, namely:

1. That a juvenile member should be defined as a boy member fourteen to sixteen years of age. 2. That the rate for attendance on juvenile members of adult lodges should be sixteen shillings per member *per annum* for lodges having their meeting places within the Sydney metropolitan area and twenty-two shillings for other lodges. 3. (i.) That where a juvenile is entitled to medical benefit in virtue of his parent's membership and to sickness benefit independently of his parent's membership, he should not be entitled to sick pay certificate from the medical officer free

of charge under Clause 9 of the Common Form of Agreement, but that a fee of two shillings and sixpence should be payable to the medical officer for the certificate; (ii.) that where the juvenile is not entitled to medical benefit in virtue of his parent's membership, but is entitled in virtue of his own membership to medical benefit and sickness benefit, the sick pay certificate should be given by the medical officer free of charge under Clause 9. 4. That a fee should be payable for the examination of a juvenile seeking to become entitled to medical benefit in virtue of his own membership and/or to sickness benefit. 5. That if a juvenile has father ineligible for admission to the medical benefit by reason of his having income exceeding the prescribed income limit, he should not be entitled to the medical benefit of the lodge. 6. That except where inapplicable the terms and conditions of the approved Common Form of Agreement should apply to juvenile lodges. In regard to this it has been proposed by the Annual (1925) Meeting of Delegates of Local Associations of Members with the Council that a separate form of agreement be drawn up for use between juvenile lodges and their medical officers.

(c) *Income Limit.*

On the recommendation of the Annual (1925) Meeting of Delegates of Local Associations with the Council, medical officers of lodges were advised that in the case of an applicant for the medical benefit of a lodge whose income by receipt of military pension due to war disabilities exceeds the income prescribed by the Common Form of Agreement, such military pension should not be deemed to be part of the applicant's income.

Industrial Hygiene Medical Service Contract.

A model form of agreement for use between industrial medical officer and employer (company or firm) has been received from the Federal Committee, to which the attention of members is drawn. The document is set out in full in THE MEDICAL JOURNAL OF AUSTRALIA, February 20, 1926, at page 222.

B.M.A. Lectures.

Following the example of the parent Association which established a system of lectures called British Medical Association Lectures to be delivered at meetings of Branches and larger Divisions, the Council at its meeting of January 5, 1926, resolved as follows:

1. That for the encouragement and assistance of members, especially those residing outside the metropolitan area, in the study of subjects of professional scientific interest a system of lectures of a distinctive character on scientific and clinical subjects be established, to be called "British Medical Association Lectures" and to be delivered at meetings of local Associations by members or others especially conversant with the subject chosen for the lecture.

2. That a sum not exceeding £100 be appropriated each year where possible for the purpose.

3. That the system be administered by the Organization and Science Committee and in such a way as may seem to the Committee to be most suitable.

4. That where it is desired by a local Association that a lecture be obtained, application should be made to the Honorary Secretary of the Branch with a view to the Organization and Science Committee taking the necessary steps to meet the wishes of the local Association concerned; and where a particular lecturer or a particular subject is desired by the local Association, the application should so indicate.

5. That the necessary expenses of the lecturer be paid to him by the Honorary Treasurer.

Post-Graduate Course.

Arrangements have been made for a post-graduate course in obstetrics under the direction of the Branch to be held on Monday to Saturday, April 12 to 24, 1926, at the Royal Hospital for Women, Paddington, the Women's Hospital, Surry Hills, and the Tressillian Mothercraft Training School, Petersham.

War Memorial Carillon.

In regard to the inscription on the No. 3 bell of the University of Sydney War Memorial Carillon, which was secured by the Branch in conjunction with the Faculty of Medicine as a "Medical Bell," the Carillon Executive has approved of the single word "MEDICINE" being cast in the bell instead of the longer inscription previously suggested.

Relation of Medical Attendant and Patient in the Matter of Fees Payable for the Services of Another Practitioner.

The question having arisen in the course of a matter in dispute which the Council was called upon to determine, the following memorandum on this subject was prepared by the Council and sent to members on January 6, 1926, for their information:

Relative Position of Medical Attendant and Consultant, Operating Surgeon, Pathologist, Bacteriologist, Radiologist or other specialist with respect to the Patient or the Patient's Representatives in the matter of Fees.

The attention of the Council has from time to time in recent years been drawn to instances where a medical practitioner who has arranged for a consultation to be held or a surgical operation to be performed or a report from a specialist to be obtained, has contrary to the custom and traditions of the profession claimed that the consultant or operating surgeon or specialist has been engaged not by the patient or his representative but by himself and that the fee for the service is a matter between him and the consultant operating surgeon or specialist as the case may be.

In some of the instances referred to it has been alleged that the medical attendant received a larger fee for the service than he passed on to the consultant operating surgeon or specialist.

The Council understands that the legal position in regard to liability for the payment of a consultant's fees (and the same applies in all cases where arrangements have been made by a medical attendant for the services of another practitioner to be available for his patient) is that such liability is in the patient and not in the medical attendant by reason of an implied contract between the patient and the consultant; and that the medical attendant is the agent of the patient for the purpose of making such arrangements. Even in the case where as sometimes happens there is an agreement or contract between the patient and the medical attendant, that the latter (the medical attendant) shall engage the consultant and be responsible to the consultant for the payment of his fees, the patient is, nevertheless, liable in law to the consultant for his fees. If, however, the consultant is a party in any arrangement made with the patient intended to preclude him from looking to the patient for payment for his services, the patient is not liable for such payment.

In the case where the medical attendant omits to disclose to the other practitioner the patient's name and address, as may happen where the medical attendant sends a specimen to a pathologist for examination and report, the medical attendant is still the agent of the patient in the matter. He would, however, be responsible in law for the payment of the pathologist's fees by reason of the fact that he had not disclosed the principal's name.

The Council holds that the patient is entitled to a receipt from the consultant operating surgeon or specialist for the money paid by him in every case where the money is received by such consultant operating surgeon or specialist from the medical attendant.

—Council Meeting, January 5, 1926.

Traffic Regulations: Medical Practitioners' Motor Cars.

The Chief Secretary's Department was approached with a view to provision being made in the new traffic regulations which, it was understood, were under consideration: (1) To allow of medical practitioners' cars when in use

by them in the course of their practice (*a*) being parked (i.) close to their consulting rooms, (ii.) close to any place where the practitioner may be attending a patient; (*b*) having priority at punt crossings or at places where traffic may be delayed. (2) For a distinguishing badge which may be fixed to a medical practitioner's car indicating that the car is being used by the medical practitioner in the course of his practice. A reply was received to the effect that the proposals were not approved. The Council, however, was advised that so far as the Police Department was concerned, there would be no objection to medical men placing some identification mark or disc upon their windscreen to obviate any need for questioning the driver when he desires preference at a ferry or punt. It is hoped that an appropriate mark or disc, as indicated, may be designed with the approval of the Department.

Congratulations.

Congratulations were conveyed to Professor J. C. Windeyer on his appointment as the first Professor of Obstetrics in the University of Sydney and to Professor A. N. St. G. H. Burkitt on his appointment to the Chair of Anatomy in the University of Sydney in succession to the late Professor John I. Hunter. Congratulations were also extended to Dr. Earle Page and Sir Neville Howse on their re-election to the Federal Parliament and their continuance in office as Treasurer and Minister for Defence and for Health respectively in the Commonwealth Government, and to Dr. L. W. Nott on his election as a member of the House of Representatives.

Visitors.

(*a*) During the visit of the United States of America Battle Fleet in July and August, 1925, courtesies were exchanged between the President and members of the Council and the medical officers of the Fleet. Motor car excursions were organized for two occasions and the Council entertained the medical officers at dinner at the Australian Club. The members of the Association were invited to visit the Hospital Ship U.S.S. *Relief* and responded in large numbers.

(*b*) Dr. Malcolm T. MacEachern, Director of Hospital Activities and Associate Director of the American College of Surgeons, visited Sydney on February 1 to 12, 1926, and was kind enough at the invitation of the Council to address the medical staffs of hospitals on the subject of hospitals and their administration at a meeting convened for the purpose on February 10 at the Anatomy Theatre, Medical School, University of Sydney.

R. B. Wade,
President.

Financial Statement.

Dr. W. H. Crago, the Honorary Treasurer, presented the statement of receipts and expenditure of the Branch and the balance sheet and financial statement for premises and moved that they be received. In regard to the former Dr. Crago pointed out that in 1889, when he was first appointed Treasurer, the subscriptions of the members for the year amounted to £224. During the year 1925 the subscriptions were £6,828.

In reference to the premises account Dr. Crago announced that he had been able during the course of the year to pay off the remaining portion of the mortgage and exhibited the title deeds as evidence of the fact that the premises were unencumbered. The debentures held by members of the Branch stood at £11,424. He announced that a scheme for the widening of Elizabeth Street had been adopted by the City Council, according to which the ground on which the building stood, together with the house, would be resumed. It was uncertain when notice of resumption would be served. The Council had considered various proposals for meeting the situation should the branch find it necessary to move out of its premises. The motions were adopted.

BRITISH MEDICAL ASSOCIATION—NEW SOUTH WALES BRANCH.

Receipts and Expenditure for the Year Ended December 31, 1925.

Receipts.

	£	s.	d.
Balance, Forward	227	4	7
Fixed Deposit, Matured	1,000	0	0
Debenture, Paid Off	400	0	0
Subscriptions	6,828	0	6
Interest Received	147	0	5
Official Assignee	66	11	4
Discount and Exchange £54 11 4			
Less *Contra* 10 11 6			
	43	19	10
Sales (Common Form of Agreement)	19	19	5
	£8,732	16	1

Expenditure.

	£	s.	d.
British Medical Association	1,839	9	3
The Medical Journal of Australia	1,445	10	0
Clerical Assistance	1,205	0	0
Legal Expenses (Balance)	366	5	5
Rent £300 0 0			
Less *Contra* 46 5 0			
	253	15	0
Printing and Stationery	204	10	7
Stamps and Telegrams	161	10	9
Library	175	1	9
Parquetry Floor	157	10	0
Painting	26	12	0
Federal Committee	143	4	0
Stott and Underwood (Mimeograph, Addressing Machine and Typewriter)	103	10	0
Chairs (Repairs and Rubbers)	25	15	2
Cleaning Offices	26	0	0
Blinds, Towels and Washing	11	2	2
Sundries	31	8	1
Telephone	28	15	0
Travelling Expenses	29	16	8
Attendance *et cetera*, Meetings	20	0	0
Loan, Premises Account	2,250	0	0
Balance—			
Cash Book	225	3	11
Petty Cash	2	16	4
	£8,732	16	1

Examined and found correct,
A. Maitland Gledden
Fred. W. Hall
} Auditors.

W. H. Crago,
Honorary Treasurer.

DR. T. W. LIPSCOMB said that the time had arrived when they should place on record their appreciation of the valuable work of Dr. W. H. Crago in his capacity as Honorary Treasurer of the Branch. Dr. Crago had recently celebrated his seventy-fifth birthday and he was in his thirty-sixth year of office as Honorary Treasurer. This meant that he had spent half of his life in looking after their financial interests. He informed the members of the immense amount of work which Dr. Crago did on their behalf and emphasized the fact that this work was honorary work. Referring to the building he reminded his audience that it had two fathers, Dr. W. H. Crago and Dr. G. H. Abbott. The building and the land on which it stood, had cost approximately £30,000 sixteen years previously. It had recently been valued at a sum of £76,000. It was a matter for congratulation that the building belonged to the Branch without any encumbrances.

DR. ANDREW DAVIDSON seconded the motion and eulogized Dr. Crago.

DR. R. B. WADE, before putting the motion to the meeting, told the members that as well as being an excellent treasurer, Dr. Crago was a difficult man. He persistently refused all their endeavours to make a tangible recognition of his services. They had at last prevailed upon him to withdraw his objections. Dr. Crago had consented to sit for a portrait to be painted in oils which would later adorn the library. He put the motion to the meeting; it was carried with acclamation.

In thanking the members, Dr. Crago said that what he had done had been a labour of love. He had been reminded during Dr. Lipscomb's speech of the fact that the late Odillo Maher had always referred to the building as "Crago's Baby."

On the motion of Dr. Crago seconded by Dr. Lipscomb, the thanks of the members were conveyed to Dr. A. M. Gledden and Dr. F. W. Hall for their Services as Honorary Auditors.

PRESIDENT'S ADDRESS.

DR. R. B. WADE delivered his address (see THE MEDICAL JOURNAL OF AUSTRALIA, April 10, 1926, page 399).

DR. R. J. MILLIARD, C.M.G., moved a vote of thanks to the President for his address. He stated that he had seldom listened to a more statesmanlike speech on matters of the greatest public importance. No one would question the national significance of preservation of health or of the proper care of sick persons. These were matters in which they as a profession were dealing with in their daily lives and the profession was peculiarly capable of giving advice in connexion with these matters. He expressed the hope that the Government would be influenced by the reports referred to by Dr. Wade and by the advice received from the distinguished visitor from America. He also spoke of the self-sacrificing work which Dr. Wade had done throughout the year as President of the Branch.

DR. S. A. SMITH, in seconding the motion, mentioned that Dr. Wade had described his year of office as uneventful and had then proceeded to show that it had been extremely eventful. By uneventful Dr. Wade had meant freedom from petty strife and it was a matter for congratulation that there had been this freedom. It was a great delight to listen to an address on matters of national significance by a master of his subject. He was sure that no one was more capable of handling these subjects than Dr. Wade. He endorsed what Dr. Millard had said in regard to the manner in which Dr. Wade had carried out his duties as President. He had conducted the affairs of the Branch with ability and urbanity.

The motion was carried. Dr. Wade replied briefly.

ELECTION OF OFFICE-BEARERS.

The President announced the result of the election of President, Vice-President and Members of Council as follows:

President: Dr. R. J. Millard, C.M.G., C.B.E.,

Vice-President: Dr. S. A. Smith.

Members of the Council: Dr. A. J. Aspinall, Dr. J. E. V. Barling, Dr. F. Barrington, Dr. George Bell, O.B.E., Dr. C. B. Blackburn, O.B.E., Dr. W. H. Crago, Dr. F. Brown Craig, Dr. A. Davidson, Dr. J. A. Dick, C.M.G., Dr. A. W. Holmes à Court, Dr. E. M. Humphery, Dr. J. L. T. Isbister, Dr. C. H. E. Lawes, Dr. T. W. T. Lipscomb, Professor A. E. Mills, Dr. A. A. Palmer, Dr. R. H. Todd and Dr. R. B. Wade.

DR. R. H. TODD called the attention of the meeting to the fact that Dr. George Armstrong had withdrawn from nomination. Dr. Armstrong had been a most valuable councillor since 1909 and he was sure that the members would regret the loss of his services on the Council.

It was resolved on the motion of DR. GEORGE BELL, seconded by DR. T. W. T. LIPSCOMB, that the members place on record their appreciation of the valuable services of Dr. George Armstrong during the past seventeen years.

A vote of thanks was accorded to the Honorary Scrutineers, Dr. J. G. Edwards, Dr. H. S. Marsh, Dr. A. J. Gibson, Dr. H. A. Ridler, Dr. L. G. Tait, Dr. H. G. Humphries and Dr. W. Evans.

It was also resolved that Dr. A. H. Gledden and Dr. F. W. Hall be appointed Honorary Auditors for the ensuing year.

The following appointments were made:

Representative of the Branch in the Representative Body: Professor A. E. Mills.

Delegates at the Annual Meeting, Nottingham, 1926: Dr. Mary Edelsten-Pope, Dr. J. Morton, Professor A. E. Mills, Dr. M. Yuille, Dr. A. L. Kerr, Dr. C. V. Single and Dr. C. Norman Paul.

INDUCTION OF PRESIDENT.

DR. R. B. WADE said that Dr. Millard who was about to take possession of the chair which he, the speaker, was vacating, needed no introduction to the members. Those who did not know him personally, knew of him in his public capacity in connexion with the mental service and as head of the Coast Hospital. Many would remember that Dr. Millard had occupied a very prominent position in the Australian Army Medical Corps during the war and that for some time during the temporary absence of General Howse he had acted as the Director-General of Medical Services. He was satisfied that he would fill the position of President to the advantage of the Branch and with credit to himself. He hoped that he would derive as much pleasure and profit out of his year of service as he himself had done.

Before vacating the chair Dr. Wade wished to express his gratitude to his colleagues on the Council, more particularly Dr. Todd, the Honorary Secretary, for the loyal and admirable support they had rendered.

DR. R. J. MILLARD on occupying the chair thanked the members for the honour they had done him in placing him in the position of great responsibility. He had some diffidence since many of the problems with which the President had to deal, were problems connected with general practice. He had little knowledge of these problems.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Hardie, John Patrick, M.B., Ch.M., 1925 (Univ Sydney), 41, Fern Street, Randwick.

Macindoe, Norman Macleod, M.B., Ch.M., 1925 (Univ. Sydney), Orange.

Morris, George Bentham, M.B., Ch.M., 1925 (Univ. Sydney), 31, Woodstock Street, Waverley.

MacCallum, Walter Paton, M.B., Ch.M., 1924 (Univ. Sydney), Wyuna Road, Point Piper.

Waterhouse, Arthur Stanley, M.B., 1924 (Univ. Sydney), Torrington Road, Strathfield.

Post-Graduate Work.

COURSE IN TROPICAL MEDICINE AND HYGIENE.

THE Commonwealth Department of Health advises that a course on tropical medicine and tropical hygiene will commence at the Australian Institute of Tropical Medicine, Townsville, on May 1, 1926.

Details of the course were published in THE MEDICAL JOURNAL OF AUSTRALIA of February 6, 1926.

Intending applicants should apply early to the Director, Division of Tropical Hygiene, Eagle Street, Brisbane, or to the Director, Australian Institute of Tropical Medicine, Townsville.

Obituary.

JOSEPH MARSHALL.

BY the death of Dr. Joseph Marshall which occurred at Tathra, near Bega, New South Wales, on March 8, 1926 the medical profession lost from its ranks a practitioner of sterling qualities and one who had given many years of consistent service to the community.

Joseph Marshall was born at Dromore, County Tyrone, Ireland in 1853. His father, Joseph Marshall had been in practice there for forty years. He was educated at the Royal School, Raphoe, Ireland and graduated in arts, medicine and surgery at Trinity College, Dublin in 1876. After graduation he accepted a position at the Brecon Infirmary, Wales and subsequently practised at Linton in Cambridgeshire. When his father died, he took over the practice at Dromore, but after five years he came to Australia. On his arrival he settled at Bega and remained in active practice there for thirty-six years.

Joseph Marshall saw active service during the South African War and attained the rank of major. During the Great War he was keen to bear his share of the burden. He was not fit for service overseas, but did duty at home at both Liverpool and Dubbo camps. His health failed towards the end of 1921 and he retired from active practice in 1922. Later on his health improved somewhat and remained moderately good until 1925 when his final illness began to make itself apparent.

Joseph Marshall endeared himself to a wide circle of friends and he was held in high esteem by the people for whom he laboured so long and faithfully. He was a prominent mason. A former colleague has described as his most conspicuous characteristics his "uprightness of character and his love of a square deal."

Medical Appointments.

Dr. Frank Raymond Hone (B.M.A.) has been appointed Honorary Assistant Physician, Consumptive Home, Adelaide Hospital.

* * * *

Dr. Albert Curtis (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane and the Receiving House, Ballarat.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xxiv.

ALFRED HOSPITAL, MELBOURNE: Radiological Registrar, Surgeon for Special Evening (Venereal Diseases) Clinic, Clinical Assistant to Children's Specialist.

PERTH HOSPITAL, WESTERN AUSTRALIA: Chief Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Ceduna, Wudinna (Central Eyre's Peninsula), Murat Bay and other West Coast of South Australia Districts.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

APR. 19.—New South Wales Branch, B.M.A.: Organization and Science Committee.
APR. 20.—Tasmanian Branch, B.M.A.: Council.
APR. 20.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
APR. 21.—Western Australian Branch, B.M.A.: Branch.
APR. 23.—Queensland Branch, B.M.A.: Council.
APR. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.
APR. 28.—Victorian Branch, B.M.A.: Council.
APR. 29.—New South Wales Branch, B.M.A.: Branch (Ordinary)
APR. 29.—South Australian Branch, B.M.A.: Branch.
MAY 4.—Tasmanian Branch, B.M.A.: Council.
MAY 5.—Victorian Branch, B.M.A.: Branch.
MAY 5.—Western Australian Branch, B.M.A.: Council.
MAY 6.—South Australian Branch, B.M.A.: Council.
MAY 7.—Queensland Branch, B.M.A.: Branch.
MAY 8.—New South Wales Branch, B.M.A.: Ethics Committee.
MAY 11.—Tasmanian Branch, B.M.A.: Branch.
MAY 13.—Victorian Branch, B.M.A.: Council.

Editorial Notices.

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